

**DEVELOPMENT OF AN ONLINE INTERVENTION TO
INCREASE MENTAL HEALTH LITERACY AND PROMOTE
SELF-MANAGEMENT OF DEPRESSION IN UNIVERSITY
STUDENTS**

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**Thesis submitted to the University of Nottingham
for the degree of Doctor of Philosophy**

JULY 2015

Abstract

Young adulthood is a vulnerable period for the onset and development of depression, and is a common mental health problem experienced by university students. Depression can significantly impact and impair students' academic performance, social relationships, and general well-being. However students often do not seek professional help for their mental health for many reasons, including stigma about mental health and help-seeking and preferences for self-reliance. Student populations are highly connected to internet-enabled technologies, and online interventions present a useful strategy for helping managing depression and can address many reasons why they do not seek professional help. Mental health literacy is a paradigm which encompasses an individual's lay beliefs, knowledge and attitudes relating to mental disorders, which assist in recognition, management and prevention of mental health difficulties. The aim of this PhD was to develop an evidenced-based psycho-educational online intervention for promoting mental health literacy with regards to depression ("depression literacy") and management of depression in Nottingham university students. Within this context, "management" referred to adaptive strategies to treat depression, and included seeking professional help and use of self-help.

This online intervention was informed by evidence from several research projects and through literature review. **Chapter One**

provides an overview of depression in university students, literature review of help-seeking theory for mental health-related help-seeking, and the role of mental health literacy in helping improve management and help-seeking for depression in university students. Through a systematic review and meta-analysis, **Study One (Chapter Two)** explores the evidence for computer- and web-based interventions to improve common mental health problems in university student populations. To identify the mental health needs of the intervention's target population, **Study Two (Chapter Three)** describes a quantitative cross-sectional survey which profiled depressive and anxiety symptoms and related help-seeking behaviours with 758 local university students. Expanding on this study, **Study Three (Chapter Four)** used semi-structured interviews and thematic analysis to explore students' perceptions of changes in their mental well-being since entering university, factors affecting their mental well-being, and how they coped and managed their mental health within education. Findings from these two studies suggested friends were an important source of help. This led to **Study Four (Chapter Five)**, which details an experimental study exploring students' helping actions to support a hypothetical friend experiencing depressive symptoms.

Findings from these four studies were inputted into the development of the online intervention, which was predominantly based on Rickwood et al.'s (2005) process model of help-seeking. **Study Five (Chapter Six)** describes the development and brief usability testing

of the online intervention, named “Managing Your Mood Online” (MYMO), which consisted of ten sections reflecting different aspects of mental health literacy.

This thesis demonstrates the first stage of a process to design an appropriate and relevant resource for Nottingham-based university students. The implications of the findings from the five studies, both on their own and in their contribution to the online intervention, are respectively described. **Chapter Seven** considers the whole process of the intervention’s development and plans for future research and the next stage of re-design of the intervention.

Preface and contributions to thesis

The original proposal for this thesis, to develop and evaluate an online intervention for depression in students, was developed by Professor Cris Glazebrook and Professor Richard Morriss (the author's two supervisors) and Mental Health Research UK. The studies presented in Chapters 2-6, which contributed towards the interventions' development, were designed by the author, with supervision from her two supervisors. The author was responsible for obtaining ethics from the University of Nottingham Medical School Ethics Committee, participant recruitment, data collection, statistical analyses and interpretation in these five studies. The author was responsible for the design and development of the online intervention.

Study One was supported by practical guidance and assistance from Professor Clive Adams and Hannah Jones, with additional clarification about types of intervention sourced from Dr Lou Farrer. Recruitment and data collection in Study Four was assisted by John Wardlaw (third year BMedSci student, supervised by author), and coding structure and guidance was sourced from Professor Anthony Jorm and Alyssia Rossetto. The process of inter-rater reliability were assisted by Dr Charlotte Beer for Study Three, and Beth Mead for Study Five.

Publications and presentations arising from this thesis

The following publications and presentations have been produced from work within this thesis:

Publications

Chapter Two: Davies EB, Morriss RM & Glazebrook C. (2014). Computer-delivered and web-based interventions to improve depression, anxiety and psychological well-being of university students: a systematic review and meta-analysis. *Journal of Medical Internet Research*, 16 (5): e130. (Appendix 1).

Presentations

- | | |
|---------------------------|--|
| 2015
(March) | <u>Davies EB</u> , Morriss R & Glazebrook C. <i>Development and Usability of a Website-Based Depression Literacy Intervention for University Students in Nottingham</i> . Poster presented at the <i>Developing Youth Friendly Mental Health Services</i> conference, Institute of Mental Health, the University of Nottingham. |
| 2015
(March) | <u>Davies EB</u> , Morriss R & Glazebrook C. <i>Development of a Website-Based Mental Health Literacy Intervention for University Students in Nottingham</i> . Oral presentation delivered at the 'Technology for Young People's Wellbeing' seminar (Applying Relationships Science to Contemporary Interventions ESRC seminar series), University of East Anglia. |
| 2014
(October) | <u>Davies EB</u> , Morriss R & Glazebrook C. <i>Development and Usability of a Website-Based Depression Literacy Intervention for University Students in Nottingham</i> . Poster presented at the 7th Scientific Meeting of the International Society for Research on Internet Interventions [ISRII], Valencia, Spain. |
| 2014 (June) | <u>Davies EB</u> , Glazebrook C & Morriss R. <i>Computer and</i> |

website-based interventions to improve common mental health problems in university students: a meta-analysis. Poster presented at the eMind Conference, The University of Birmingham.

2014 (May) Davies EB, Glazebrook C & Morriss R. *"They'd probably be like 'it's not cancer mate, just get out'": Students' perceptions of GPs and other help sources for mental health issues.* Poster presented at Institute of Mental Health 2014 Research Day, The University of Nottingham.

2013 (June) Davies EB. *Logging on for better mental health.* Poster presented at the University of Nottingham Research Showcase, The University of Nottingham.

2013 (May) Davies EB, Glazebrook C & Morriss R. *Online and computer-delivered interventions to improve higher education students' mental health: a review.* Poster presented at the 6th Scientific Meeting of the International Society for Research on Internet Interventions [ISRII], Northwestern Memorial Hospital, Chicago, USA.

2013 (May) Davies EB, Glazebrook C & Morriss R. *Online and computer-delivered interventions to improve higher education students' mental health: a review.* Poster presented at Institute of Mental Health 2013 Research Day, The University of Nottingham.

2011 (November) Davies EB. *Online and computer-delivered interventions to improve higher education students' mental health: a systematic review in progress.* Oral presentation delivered to Institute of Mental Health PGR seminar, The University of Nottingham.

Abbreviations

BOS	Bristol Online Surveys
BSD	Bipolar spectrum disorder
CBT	Cognitive Behavioural Therapy
CCBT	Computertised/internet-based Cognitive Behavioural Therapy
CI	Confidence Interval
CMD	Common mental disorder
GAD-7	Generalised Anxiety Disorder scale (7-item version)
GP	General Practitioner
HEI	Higher education institution
HoS	Head of School
ITT	Intention-to-treat analysis
MDQ	Mood Disorder Questionnaire
MHL	Mental health literacy
MHFA	Mental health first aid
NTU	Nottingham Trent University

OR	Odds ratio
PHQ-9	Patient Health Questionnaire (9-item version)
RAM	Random Effects Models
RCT	Randomised controlled trial
SDs	Standard Deviation(s)
SES	Socioeconomic status
SMD	Standardised Mean Difference
UoN	The University of Nottingham
URL	Uniform resource locator, i.e. a website address
Yr	Year
%	Percentage
α	Cronbach's alpha

Acknowledgements

Firstly I would like to thank my supervisors, Professors Cris Glazebrook and Richard Morriss, for their invaluable support, guidance, and encouragement throughout the whole of this PhD.

I am grateful for the financial support and studentship received from Mental Health Research UK (MHR-UK) and the University of Nottingham. I also thank Clair Chilvers, Founding Trustee of MHR-UK, for her continued support over the past three years.

Special thanks to Professor Clive Adams and Hannah Jones for their help throughout the long systematic review and meta-analysis process, and to Charlotte Beer for her assistance with Study Three and for always providing a listening ear.

My deepest gratitude goes to the numerous students who volunteered their time to take part in this research. Likewise I am also grateful to the numerous health professionals whom I contacted about this topic, and to the university staff and academics who circulated study advertisements.

On a personal level, my deepest gratitude goes to my parents, Ulia and Alun, and sister Siân, who despite not quite knowing what I was doing throughout these three years, were continuously supportive and encouraging of my work. I would also like to thank fellow PhD students in A10 and Beth Mead for being there for support and providing much-needed laughs. Finally I thank my partner Ryan Skilton for his endless patience, understanding and love.

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Chapter One: An overview of depression in university students and its treatment and management

In the United Kingdom, increasing numbers of young people are entering higher education. Young adulthood is a vulnerable period for the onset and development of several mental health problems, including depression. Research with university students has shown depression to be highly prevalent in this population, and it can greatly impair the social, cognitive and academic skills needed to successfully negotiate and complete higher education. Young people have difficulties accessing appropriate support for their mental health, and so depression may be under-treated in students. Students may avoid or not receive professional help for many reasons, including preferences for self-reliance, the normalisation of mental distress within the university environment, and not being aware of how professional sources can help. This introductory chapter provides an overview of student depression and its consequences, synthesises relevant mental health help-seeking theories and their application to student depression, and outlines the professional help options available to British university students. It finishes with describing how improving students' mental health literacy could help their management of depression and related help-seeking behaviours, and how internet-based interventions may provide a useful avenue for promoting and improving mental health literacy.

1.1 Brief outline of higher education in the United Kingdom

Higher education refers to voluntary education delivered in universities and colleges. Although its framework varies across the countries of the UK, it involves undertaking post-secondary education and completing a set period of study to achieve an undergraduate degree. Within the UK, students enter higher education after completing further education, often at 18 years of age. Undergraduate courses take three years to complete, but may be longer due to location and the type and nature of degree (e.g. practitioner degrees). A substantial proportion (between 38-45%) of young British people enter university (HEFCE, 2013). An estimated 1.8 million are studying for full and part-time undergraduate degrees, with just over half a million in postgraduate education (Higher Education Statistics Agency, 2014a).

The widening participation strategy (Dearing, 1997) has resulted in increased numbers of British students entering higher education, including more from non-traditional and under-represented groups (e.g. lower socioeconomic backgrounds). Likewise, legal policies (e.g. Equality Act 2010) have increased access of people with disabilities into higher education, meaning young people with mental disorders are able to enter university and access appropriate support throughout their studies (Royal College of Psychiatrists, 2011). The UK's student population has become culturally and socially diverse, consisting of conventional school leavers, students

with pre-existing health conditions, more international, mature and part-time students, and first-generation entrants (Manthorpe & Stanley, 2002; Royal College of Psychiatrists, 2011). Given these demographic changes, it can be difficult to compare current students to previous generations. By virtue of completing prior education and meeting university entry requirements, students demonstrate considerable resilience and ability to cope with academic demands (Ibrahim, Kelly, & Glazebrook, 2013). While the majority of university students will experience similar experiences and emotional challenges in university, different academic degree subjects are associated with unique challenges and stressors, such as placements in healthcare-related degrees.

1.2 What is depression?

Depression is a heterogeneous condition, which varies person-to-person in its intensity, duration, and symptomology. Fundamentally it is characterised by the presence of persistent low mood, and loss of pleasure and enjoyment in usual activities (NICE, 2009). Its severity is identified through the presence and intensity of symptoms, as well as their impact upon the individual's functioning. The DSM-V and ICD-10 outline a list of diagnostic symptoms, as identified by the individual and/or through observation:

- Chronic sadness/low mood (key symptom)

- Decreased interest or pleasure in usual activities (also known as anhedonia) (key symptom)
- Increased or decreased appetite, and/or weight gain or loss
- Fatigue or lack of energy (key symptom on ICD-10 only)
- Difficulties with sleeping, e.g. hypersomnia, insomnia
- Slowing down or agitation of movements
- Feelings of worthlessness, guilt or self-blame
- Poor concentration and/or indecisiveness
- Low self-confidence (ICD-10 only)
- Frequent thoughts of death, suicidal ideation or self-harm

For a diagnosis of a major depressive episode, either one (DSM-V) or two (ICD-10) of the key symptoms plus an additional number (five in DSM-V, four in ICD-10) need to be present on a daily basis over at least a two-week period. Both diagnostic manuals differentiate levels of depression presentation by the number, severity of, and type of symptoms, and their functional impact. Symptoms are expected to cause significant distress and impair some level of functioning (e.g. upon occupational and social activities). The DSM-V defines mild depression as experiencing five-to-six symptoms which result in minor functional impairment; moderate depression as more than five symptoms with a considerable impact upon functioning; and severe depression as experiencing the majority of symptoms and resulting in a high level of functional impairment which interferes with daily functioning.

Other diagnostic criteria for either a major depressive episode or disorder relate to the symptoms not meeting mixed-episode criteria, or not attributable to co-morbidity of other health issues (e.g. hyperthyroidism). Diagnostic depression should not be considered in the case of recent bereavement unless the symptoms have been present for more than two months, or if other significant symptoms are present (e.g. significant impairment). Depending on its course, depression may be classified as an episode or disorder: individuals may have a one-off episode, or may experience relapse after remission. Chronic sub-threshold depressive symptoms, wherein at least five symptoms are presenting but do not meet the full diagnostic criteria, are also important to treat as they can cause similar levels of distress and disability, and increase risk for developing diagnosable depression (NICE, 2009).

1.2.1 Depression in university students

While students have been reported as experiencing poorer physical and mental health than non-student peers (Stewart-Brown et al., 2000), it should be noted this depression prevalence is not just a student-based concern. Its prevalence and societal impact within the general population is also a public health concern. Through clinical interviews, the most recent Adult Psychiatric Morbidity survey for England (N=7403 adults) reported 16.2% were screened for at least one common mental health disorder (CMD, conditions relating to depressive and anxiety disorders) in the prior week, with

the most common being mixed anxiety and depressive disorder. Across all age groups (including 16-24 years), females were more likely to have a CMD (NICE, 2009). Using diagnostic criteria, data from four European countries (N=8764) estimated a weighted prevalence of 8.56% for depressive disorders; for the British sample, a higher prevalence was reported in females and urban respondents (Ayuso-Mateos et al., 2001). Likewise a Swedish community survey (N=3001) found 10.8% and 14.7% screened respectively for clinically significant depression and anxiety (Johansson, Carlbring, Heedman, Paxling, & Andersson, 2013).

There has been consistent research into the mental health of university students; evidence is available from cross-sectional (Garlow et al., 2008; Macaskill, 2013; Turner, Hammond, Gilchrist, & Barlow, 2007) and longitudinal surveys (Bewick, Koutsopoulou, Miles, Slaa, & Barkham, 2010; Zivin, Eisenberg, Gollust, & Golberstein, 2009). A systematic review of 24 studies of depression prevalence in university student populations, found prevalence rates ranging from 10.1% to 84.5%, with a calculated weighted mean prevalence rate of 30.5% (Ibrahim, Kelly, Adams, & Glazebrook, 2013). In response to increased numbers of students reporting mental health difficulties, higher education institutions have reported an increase demand for university-based support services (Quinn, Wilson, MacIntyre, & Tinklin, 2009).

Due to the nature of their degree, medical students appear to be a subgroup who have received strong research interest, and are

subject to several prevalence studies and intervention trials to improve their mental health (Ibrahim, Kelly, Adams, et al., 2013). This attention appears due to the multitude of stressors that this sub-group particularly faces in professional training, issues around fitness-to-practice, and the need for a future healthy workforce (Samaranayake & Fernando, 2011; Shapiro, Shapiro, & Schwartz, 2000). It might be expected for medicine students to have poorer mental health outcomes than students on other courses. Evidence suggests the opposite: a weighted prevalence rate of 25.6% (range 10.3-59%) was found from twelve studies with solely medicine student samples, while eleven studies sampling students from different courses reported a 35.6% (range 14-85%) weighted prevalence (Ibrahim, Kelly, Adams, et al., 2013).

As with findings from the general population, there are gender differences in students' mental health. Female students were twice as likely as males to screen for anxiety disorders in an American cohort (Eisenberg, Gollust, Golberstein, & Hefner, 2007); and nine studies reported higher prevalence of depressive symptoms in female students (Ibrahim, Kelly, Adams, et al., 2013). However, six publications within the same review did not find any gender differences, which could be due to the oversampling of females that often occurs in student-based research. Similarly Ibrahim et al. (2013) comment that gender differences may not be found in student populations because both genders experience similar university-based stressors and risk factors affecting their mental

health, and student samples may be more heterogeneous than their non-student counterparts.

1.2.2 Risk factors for depression in university students

There are many psychosocial and economic factors impacting upon students' mental health (Royal College of Psychiatrists, 2011). Students coming from more non-traditional backgrounds may be more vulnerable to developing depression; this is important given these students make up a significant proportion of the student body. Akin to the general population, indices of lower socioeconomic status (SES) have been associated with students' depressive symptomology and other mental health outcomes. In a cross-cultural study involving university students from twenty-three countries, lower family wealth was associated with increased likelihood of screening for elevated depressive symptoms (Steptoe, Wardle, Tsuda, & Tanaka, 2007). Within seven of the participating countries, lower level of parental education was also associated with increased likelihood of elevated symptoms. This association was also found in the British student cohort: higher maternal level of education and higher family affluence were associated with lower likelihood of depressive symptoms (Ibrahim, Kelly, & Glazebrook, 2013). It may be that higher SES parents are more able to financially and practically support their child whilst at university.

Coming to university and coping with many new transitions and changes is naturally bound to affect students' physical and mental health. These changes and challenges include adapting to higher

education, academic demands and assessments, changes in lifestyle, relocation and independent living, managing finances and employment, loss of established social networks and formation of new ones, and transition into adulthood and increased independence (Cleary, Walter, & Jackson, 2011; Denovan & Macaskill, 2013; Julal, 2012). Being in the higher education environment also means top-achieving students are now faced with others of similar ability; this, combined with the new level of education, means students may not achieve as highly, and experience many losses or perceived failures early in university (Enns, Cox, Sareen, & Freeman, 2001). Uncertainty in the graduate job market may also mean students place themselves under great pressure to achieve highly to stand out, and increased financial costs and availability of student loans has added further financial pressures (Bewick, et al., 2010). These stressors also affect students' adjustment to university, academic performance and progression, and their decision to remain at university (Julal, 2012)

Students' abilities to cope with these new demands and situations are also important, and the transitional period into university might make students more vulnerable and sensitive to stressors (Denovan & Macaskill, 2013). Sense of control (SoC) appears to be an important factor. In two student samples, lower SoC has been associated with screening for elevated depressive symptoms, and SoC may mediate the relationship between SES and depressive symptomology (Ibrahim, Kelly, & Glazebrook, 2013; Steptoe, et al.,

2007). Prior to university, students are likely to have been in a secure family environment, where social support was more accessible. The shift in environment and social support may affect their coping skills at university. Problem-focused coping and social support aid students' positive adaptation to university life (Denovan & Macaskill, 2013). In a cohort of psychology undergraduates (N=131), use of reflective coping styles (i.e. approach-orientated problem resolution) was significantly associated with seeking out student support services for personal problems (Julal, 2012).

Some personality traits influence the risk of developing depression: it is associated with neuroticism and has a negative association with extraversion (Kotov, Gamez, Schmidt, & Watson, 2010). Some personality traits aligned with high academic achievement and performance are also associated with increased risk for developing depression. Perfectionism is a multifaceted personality trait which has beneficial ('adaptive') and harmful ('maladaptive') forms (Dickinson & Dickinson, 2014). It has been conceptualised as representing three separate personality traits reflecting perfectionism about oneself ('self-orientated' perfectionism), about others ('other-orientated'), and perception from other people ('socially-prescribed') (Sherry, Hewitt, Flett, & Harvey, 2003). Perfectionism can influence students' attitudes, cognitions, motivation and behaviours relating to their academic performance and mental health. Adaptive perfectionism can be beneficial in helping goal achievement and motivation to reach positive

outcomes. Maladaptive perfectionism is characterised by personal expectation to achieve highly and flawlessly, unrealistic goals and expectations, chronic self-criticism and blame, and all-or-nothing thinking (Pirbaglou et al., 2013), and many of these characteristics resonate with depressive symptomology. Maladaptive perfectionism is a risk factor for depression, anxiety and eating disorders (Pirbaglou, et al., 2013). There has been increased focus upon university students' perfectionism and its relationship with mental health, with medical students being a sub-group of focus (Enns, et al., 2001).

1.2.3 Diagnosing depression in university students and the risk of medicalisation

Assessing whether depressive symptoms are a normal reaction within daily life or whether they indicate a clinically significant case is difficult in young adults for several reasons. University students typically fall within the 18-24 age range, meaning they are emerging out of adolescence. Numerous psychosocial, physiological and cognitive developmental changes occur during adolescence, in which rapid changes in mood and behaviours are common (McDermott et al., 2010). Coping with various demands and life events can affect adolescents' moods and thinking styles, and subsequently impair their quality of life and functioning (McDermott, et al., 2010). These natural mood fluctuations affect the ability to accurately recognise depressive symptoms.

The social and cultural context in which depressive symptoms occur must be considered. Adolescence can influence lay recognition, with moods being labelled as being “grumpy”, instead of “sad” (McDermott, et al., 2010). Compared to older adults, in young people depressive symptoms may be more likely to present alongside anxiety, low self-esteem, and somatic symptoms (Carlson, 2000; McDermott, et al., 2010). Declining academic performance is also a strong indicator of young people’s impaired concentration and decision making (Carlson, 2000). Depression presentation in university students tends to be more cognitive, such as impaired concentration, pessimism, lethargy, self-blame and loathing (Khawaja & Bryden, 2006). University also challenges students’ abilities to cope with losses and they may grieve in response, resulting in feelings of sadness; these are typical human responses to such events (Horwitz & Wakefield, 2007). Some diagnostic symptoms of depression (e.g. sleeping problems, changes in appetite) may be less relevant for assessing student depression as university life itself can cause these symptoms to occur (Khawaja & Bryden, 2006).

It is important to contemplate the risk of over-diagnosis and medicalisation in perceiving symptoms as indicative of clinically-significant depression. Medicalisation refers to describing any problem in ‘medical terms’ and/or being treatable through medical intervention (Davis et al., 2008). For mental health, this involves perceiving and defining normal everyday emotions as medical

conditions, and thereby being manageable and treatable. Medical classification manuals have helped achieve some stability and reliability in identifying and treating mental disorders (McPherson & Armstrong, 2006). However, diagnostic criteria can also be applied to many experiences and emotions in those who are not experiencing clinical depression (Mulder, 2008). Normal unpleasant emotions are felt by everyone to some degree throughout their lives. Likewise some personality traits overlap with depressive symptomology but do not necessarily indicate a diagnosable disorder (Chodoff, 2002).

The boundary where mental health problems are clearly diagnosable mental disorders is less concrete than physical illnesses, partly due to more heterogeneous presentations and limited objective markers (Chodoff, 2002). Depressive symptomology is associated with some physical conditions (e.g. hypothyroidism), in which case 'medicalisation' through relevant screening is valid. The concept of labelling may be more important for mental health conditions, as correct recognition of symptomology is important for recognising and initiating the help-seeking process (Wright, Jorm, & Mackinnon, 2011). However, labelling can also lead to stigmatisation, illness behaviours and feelings of medicalization and victimisation, and potentially resulting in the perception that the person can only be helped by a professional (Mulder, 2008). Likewise, labelling can additionally encourage the unwarranted use of treatments (Dowrick & Frances, 2013).

1.2.4 Deciphering clinically-significant symptoms of depression

Several factors collude to allow assessment of the clinical significance of the presenting symptoms (McDermott, et al., 2010). Firstly, the context of where the symptoms are occurring is considered. For example, bereavement is associated with a great emotional response to loss and depressive symptoms are very common. Any emotional loss response (e.g. sadness) should be proportionate in size to its cause (Horwitz & Wakefield, 2007). The DSM-V states a depression diagnosis may be provided for grief only if the depression is chronic and/or severe (First, 2009). The level of impairment upon functioning and quality of life are additional important indicators. Finally, the longevity and duration of symptoms help to indicate their clinical significance. For normal feelings of sadness or loss responses, the feelings can be expected to fluctuate and decrease over time as the person's coping mechanisms come into effect. For diagnostic depression, symptoms tend to be long-lasting, persisting throughout the day, and may not decrease in their severity. Symptoms which are chronic, show long-lasting changes in mood and behaviour, significantly impair ability to perform typical daily tasks, and impact upon their social life and relationships, are more indicative of depression in young people (Carlson, 2000; McDermott, et al., 2010). General practitioners and other mental health professionals need to use diagnostic criteria

cautiously to reduce medicalisation, especially for milder depressive symptoms (Dowrick & Frances, 2013).

There are several well-established screening measures for depression in adults, children and adolescents (Carlson, 2000). Although university students are aged within the legal definitions of adulthood, they are often still experiencing the latter stages of adolescence in transitioning to adult autonomy (McDermott, et al., 2010). Such measures may not take into account the social context of symptoms, which may be particularly important for students given their academic and social environment.

1.2.5 Consequences of student depression

Worldwide, depression is a leading contributor to disease and cause of disability: the condition, and stigma and discrimination relating to it, impairs a person's ability to engage in work, leisure and social activities, and also affects their family and support network (WHO, 2001). Sole and co-morbid depression contributes to poorer quality of life, and disables individuals by impairing their functioning, and restricting their activities (Andrews & Titov, 2007). The impact of depression upon students is somewhat similar to the general population, but we need to consider that students are undertaking a prolonged period of education, and depression can impair the skills essential for completing a degree. To complete their studies, students need to be productive and proactive, have prolonged concentration skills, and be self-motivated. Understandably, the

characteristics of depression impact upon students' abilities and skills, which are needed to maintain good academic performance.

Depression can lead to decreased academic productivity and examination/assessment performance, non-attendance of lectures, seminars and other course requirements, social isolation, academic probation and withdrawal from university (Andrews & Wilding, 2004; Eisenberg, Gollust, et al., 2007; Hysenbegasi, Hass, & Rowland, 2005; Reavley & Jorm, 2010; Storrie, Ahern, & Tuckett, 2010). In a two-year longitudinal study involving American students, depression was associated with increased risk of course dropout and lower GPA; each additional point on the depression measure (PHQ-9) used was associated with 0.31% increased risk of dropout, while a 15 point increase was associated with a 0.17 point decrease in GPA scores (Eisenberg, Golberstein, & Hunt, 2009). These associations were stronger in students who had co-morbid anxiety. Furthermore, the two key depressive symptoms differed in their impact upon academic success; chronic loss of interest, but not low mood was associated with lower GPA scores. Eisenberg comments that students with depression may not experience severe academic impairment if they are still interested and able to engage in typical activities (e.g. academic work), but could still be experiencing elevated depressive symptomology.

Long-term depression can affect physical health, such as increased vulnerability to infection, as well as increasing the risk of developing anxiety and other mental health problems (Buchanan, 2012).

Students may increase their use of alcohol, tobacco, illicit substances, and self-harming behaviours to help cope with negative affect (Buchanan, 2012). Furthermore, increased severity of depression is associated with suicidal ideation and suicide attempts (Downs & Eisenberg, 2012). Depression and anxiety can affect acquisition of professional and interpersonal skills, potentially negatively impacting upon students' career development (Russell & Shaw, 2009). Likewise reduced productivity and ineffective coping could impair their occupational skills and ability to cope with future demands (Buchanan, 2012; Reavley & Jorm, 2010).

1.2.6 Treatments for depression and self-management

Depression is treatable and manageable, through several available evidenced-based pharmaceutical and psychological treatments. The most well-known treatments are anti-depressants and psychotherapies (including cognitive behavioural therapy). Stepped-care approaches are used to guide delivery of the most effective interventions in line with the individual's severity and presentation of depression (NICE, 2009), with the least intensive treatment provided first. Likewise, access to relevant healthcare professionals is directed through the same stepped approach. Several self-help interventions have been identified as helpful for depression, and their use does not necessarily require any professional contact. A systematic review of 38 self-help treatments for depressive disorders and symptoms in adult populations found support for ten

interventions, including St John's Wort, bibliotherapy, computerised interventions and exercise (Morgan & Jorm, 2008).

Self-management is also important to consider, as depression is often long-lasting and is susceptible to relapse and recurrent episodes (van Grieken, Kirkenier, Koeter, Nabitz, & Schene, 2013). Self-management places empowerment and responsibility upon the individual in the independent daily care required to manage their chronic condition (Houle, Gascon-Depatie, Bélanger-Dumontier, & Cardinal, 2013). Applied to depression, this refers to the daily behaviours and actions which moderate and alleviate depressive symptoms (Pinto, Hickman Jr, Clochesy, & Buchner, 2013). Depression self-management involves symptom recognition and awareness of triggers; use of personal goals and action planning in managing potential relapses; knowledge of help sources available; personal ability to access help and communicate with healthcare professionals; and use of positive lifestyle changes to ameliorate symptoms (Houle, et al., 2013). Self-management may help individuals both in recovering from a depressive episode and in long-term coping with depression (van Grieken, et al., 2013). Self-management appears to refer to how individuals combine treatment and self-help interventions, and is used by individuals who meet diagnostic depression criteria to prevent relapse (Houle, et al., 2013). Self-help treatments have been adapted into self-management approaches (e.g. CBT-based bibliotherapy and online programs) (van Grieken, et al., 2013). As self-management also

includes symptom recognition and seeking out appropriate help, it appears self-help and appropriate help-seeking are aspects of self-management. Importantly, self-management may also be used by individuals who are experiencing distressing emotions or symptoms prior to diagnosis, or have sub-threshold or non-diagnostic depression (van Grieken, et al., 2013). This suggests the potential to use self-management as preventive health promotion to individuals who have not experienced a depressive episode, in order to help them recognise depression and improve their mental well-being through lifestyle management. The very nature of depression affects treatment and self-management, as it causes apathy and indifference towards seeking help, which may further impair motivation and decision making (Wilson & Deane, 2012). The negative thinking and cognitive distortions common in depression may further hinder help-seeking decisions, which can result in delaying or non-receiving of treatment (Sawyer et al., 2012; Wilson & Deane, 2010).

1.3 Help-seeking for mental health problems in young people

Definitions of help-seeking revolve around behaviour and actions reflecting adaptive coping to resolve a problem which challenges the individual's capabilities (Cornally & McCarthy, 2011). Help-seeking concepts arose from illness behaviour theory and how individuals

appraise their health and identification of, and response to, symptoms (Rickwood, Thomas, & Bradford, 2012). Help-seeking is a multi-factorial process which focuses on how cognition (e.g. beliefs, attitudes) influences intentions and subsequent behaviour, and involves communication and action to gain advice, treatment and support for a health problem (Rickwood, et al., 2012). Mental health help-seeking is “an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern” (Rickwood, et al., 2012). Help-seeking consists of five aspects. Firstly, it is a **process** on a spectrum of activity, involving cognitions, intentions and actual behaviour. Secondly, **sources of help** are categorised into *informal help* originating from social relationships (e.g. family, friends), *formal help* from professionals/services with expertise (e.g. healthcare professionals), and *self-help* interventions delivered independently without requiring help/assistance from others. Thirdly, **the type of health problem** requiring help is considered; symptoms of mental disorders vary in their severity, longevity, and diagnostic criteria, which may affect help-seeking actions. Fourthly, the **type of assistance** sought includes providing information, understanding the problem, emotional or social support, and treatment. Finally, the **timeframe**: help-seeking occurs over a period of time and involves a range of actions, including seeking out information about available help, and seeking out face-to-face help (Rickwood, Deane, Wilson, & Ciarrochi, 2005; Rickwood, et al., 2012).

The nature of the mental health problem can affect young people's help-seeking. Those experiencing severe mental distress (e.g. severe depression, suicidal ideation) have the greatest need for urgent treatment, but are often less likely to seek help than those experiencing milder symptoms (Ryan, Shochet, & Stallman, 2010). 'Help negation' refers to avoidance or refusal of help in spite of significant suicidal ideation, but is also used for other severe mental symptomology (Wilson & Deane, 2010). 'Appropriate help-seeking' refers to "a match between problem type, severity [of problem] and help source" (Wilson & Deane, 2010: p292). For mental health problems, an individual should ideally seek out help before the problem becomes more severe and detrimental. Seeking appropriate help is important because early intervention is associated with better long-term mental health outcomes (Farrer, Leach, Griffiths, Christensen, & Jorm, 2008; Wilson & Deane, 2010).

The type of help sought depends on the severity and type of presenting issue (Wilson & Deane, 2010). For example, a new student experiencing transition-related anxiety may seek out informal support (e.g. friends) to help alleviate their worries. However a student experiencing severe depression will probably require professional help and treatment. Young people may perceive teachers/academic staff as being for academic problems only (Rickwood, et al., 2005) and it is possible that students may not perceive their tutors as potential help sources for their health issues.

The mental health problem and its treatment both impact upon an individual's self-image (Pestello & Davis-Berman, 2008), and stigmatising attitudes relating to mental illness and help-seeking are a major barrier to mental health help-seeking in young people (Gulliver, Griffiths, & Christensen, 2010). Stigma presents in several forms: *personal stigma* refers to an individual's own negative perceptions (e.g. stereotypes, prejudices) about mental health and help-seeking; *public stigma* is defined as negative perceptions held by a collective (e.g. local community, society); *perceived public stigma* is an individual's own perception of public stigma; and *self-stigma* occurs wherein the individual identifies with the stigmatised group and applies this stigma to themselves (Eisenberg, Downs, Golberstein, & Zivin, 2009). Young people may see themselves as "weak" due to having depression, perceive treatment as validating their "weakness", and so not disclose their illness or their treatment to others (Kranke, Floersch, Kranke, & Munson, 2011).

Rickwood et al. (2005) note a lack of universal theory in predicting mental health help-seeking, but the literature focuses on three aspects: attitudes towards help-seeking, intentions to seek help, and actual behaviour (Gulliver, Griffiths, Christensen, & Brewer, 2012). Insufficient theories can hinder the development of interventions to promote help-seeking (Griffiths, 2013). Models of mental health-related help-seeking usually theorise it as a multi-stage process involving several interconnected cognitions and behaviours (Downs & Eisenberg, 2012).

1.3.1 The Process Framework Model

Rickwood et al. (2005) conceptualised help-seeking in young people as a four-step framework process model incorporating psychological and individual factors (Figure 1). Help-seeking is seen as social negotiation between the individual's intra-personal 'world', consisting of internal thoughts and feelings, and the interpersonal external 'world' of social relationships. Help-seeking is the 'link' between these intra-personal and interpersonal worlds, wherein the intra-personal domain becomes more interpersonal as the individual seeks help from others. Help-seeking begins with self-recognition of symptoms and appraisal of need for help. The individual must then be able to communicate this need in an understandable manner to others, and need to be willing to communicate their 'internal' world to somebody trustworthy. The model also incorporates an individual's knowledge and perceptions about available help sources, as well as attitudes and beliefs towards seeking help and treatment effectiveness.

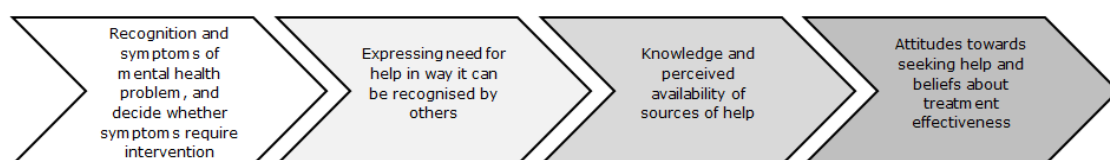


Figure 1. Rickwood et al.'s (2005) process framework model of help-seeking.

This model was developed to guide the authors' own research, and so it is uncertain whether it can be applied to intervention development (Griffiths, 2013). Gulliver et al. (2012) developed and trialled three online interventions, each of which were developed and focused on different stages of the model. Participants who received the intervention which covered the model's initial three stages reported the greatest improvements in depression and anxiety literacy, and decreases in stigma. At three-month follow-up there was no effect in any condition upon help-seeking attitudes, intentions or behaviour. This may have been too short to analyse behaviour, but it is surprising that no intervention-induced changes in attitudes and intentions were reported. It is possible the number of trial arms coupled with the sample size (n=59) meant the study lacked power to detect significant differences.

1.3.2 The 'Cycle of Avoidance' model

The Cycle of Avoidance (CoA) is a lay illness behaviour model explaining an individual's help-seeking in relation to their perceptions of mental distress (Figure 2) (Biddle, Donovan, Sharp, & Gunnell, 2007). The CoA developed from narrative analysis of interviews with twenty-three young adults (aged 16-24 years) experiencing elevated mental distress. The model suggests that young people categorise their symptoms into two polarised categories of "normal" and "real" distress. Each type of distress varies in its severity, duration, and resolution (see Table 1). Young

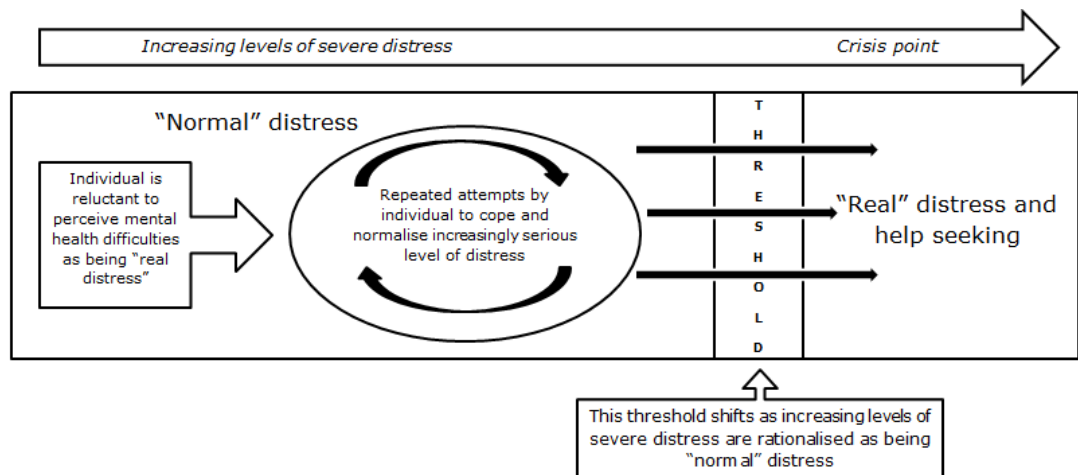


Figure 2. The Cycle of Avoidance (CoA) model (Biddle et al., 2007).

people perceive a threshold indicating the point where "normal" distress becomes "real": the individual reaches self-actualisation that help is needed or they can no longer cope, which triggers a crisis prompting help-seeking. This threshold can be pushed along a continuum of "normal distress" for as long as the individual can redefine their mental distress as "normal" and can sufficiently cope, in order to avoid recognition of "real distress" (Biddle & Gowen, 2009). The CoA suggests a difference between the clinical severity of symptoms and the individual's perceived severity. Help-seeking will be delayed, even for individuals with severe symptoms, for as long as they can rationalise their distress as "normal" and apply sufficient coping strategies.

Table 1. How young people may perceive and classify “normal” and “real” distress.

“Normal distress”	“Real distress”
Transient, short-lasting Experienced by everyone at some point Can be dealt with through coping; sufficient coping means distress is not “real”	Permanent, chronic Rare, extreme and severe in nature Symptoms are visible and impairing Associated with mental illness Inability to cope means help/intervention is needed Characterised by breakdown or crisis, which prompts help

The young people in Biddle et al.’s study (2007) perceived a cyclical relationship between distress and perceived need: help is only needed for “real” distress, but distress only becomes “real” when help is sought. Continued rationalisation of symptoms helps avoid negative perceptions associated with “real” distress”. The meanings people assign to distress have an effect upon their attitudes and behaviour, which may be more influential barriers to help-seeking than traditional structural barriers (Biddle, et al., 2007).

1.3.3.Social-cognition models and their application to help-seeking

Health behaviour models are typically structured around socio-cognitive processes (e.g. attitudes, motivation) which influence an individual’s intended and actual behaviour, including help-seeking (Wilson & Deane, 2012). Several socio-cognitive models explain health-related behaviours, such as the Health Belief Model (HBM) (Strecher & Rosenstock, 1997), Theory of Planned Behaviour (TPB) (Ajzen, 1991) and Social Cognitive Theory (SCT) (Bandura, 2004).

These stress the importance of providing information to change cognitions in order to influence behavioural intentions, as well as the role of sense of control upon behaviour. Within these models, there are differences and similarities in the theorised determinants of behaviour; for example, self-efficacy is key within SCT, while perceived behavioural control and social normative beliefs are two determinants within the TPB.

The mental health help-seeking process generally involves two stages: the self-perception of need for help, followed by behavioural action reflecting this perception (Downs & Eisenberg, 2012). Self-perception is important within socio-cognitive models, and perceptions of symptom/problem severity are determinants of help-seeking initiation in students (Czyz, Horwitz, Eisenberg, Kramer, & King, 2013; Downs & Eisenberg, 2012; Eisenberg, Golberstein, & Gollust, 2007). In American students with elevated distress the majority had not sought help, as they perceived their distress to be transient and not severe (Czyz, et al., 2013). Limited recognition of generalised anxiety disorder (GAD) could be because anxiety is perceived as normal within daily life and not recognised as a distinct mental disorder (Furnham & Lousley, 2013). Normalisation or rationalisation of symptoms means people do not perceive their mental health difficulties as severe, and so do not consider treatment (Biddle, et al., 2007). Perceived susceptibility to depression may be an important factor for targeting help-seeking

behaviour change in university students, given the stereotype that students are a 'healthy' and 'privileged' population.

There is a scarcity of research applying theoretical models to mental health help-seeking, which can help identify relevant determinants (Mo & Mak, 2009). Research suggests the HBM's, and particularly the TPB, links between knowledge, attitudes and beliefs upon help-seeking intentions and behaviours map well onto the mental health help-seeking process; there have been some mental health help-seeking interventions developed with socio-cognitive models (Bayer & Peay, 1997; Cear, Batterham, & Christensen, 2014; Mo & Mak, 2009; O'Connor, Martin, Weeks, & Ong, 2014; Samouilhan & Seabi, 2010; Skogstad, Deane, & Spicer, 2006). Demyan & Anderson (2012) trialled a brief TPB-based video-delivered intervention targeting belief-based barriers most salient to students (e.g. treatment expectations). There was no intervention effect upon belief-based barriers, but intervention participants held significantly more positive attitudes towards mental health services than controls. Participants in the intervention condition with help-seeking experience held greater positive help-seeking attitudes and intentions than those without experience. These findings are limited due to measures only being administered post-intervention, and the measurement battery may be too large in relation to the intervention's intended briefness.

SCT-based help-seeking interventions involve modelling through exposure to positive experiences of mental illness, help-seeking and

treatment (Buckley & Malouff, 2005; McAlister, Perry, & Parcel, 2008). These interventions may help decrease social distance and alter students' stigmatising attitudes and beliefs (Theriot, 2013; Yamaguchi et al., 2013). A SCT video-based intervention involving showing participants a video-based intervention of service users of psychotherapy and healthcare professionals, accounted for 24% post-intervention improvement in attitudes towards seeking professional help (Buckley & Malouff, 2005). However help-seeking behaviour was not measured and may not have occurred in the two week follow-up period. Limited follow-up is a consistent issue in intervention trials, with minimal investigation into long-term maintenance of changes (Mackenzie, Erickson, Deane, & Wright, 2014).

1.4 Pathways to professional help sources available to university students

University students form a significant sub-population in many British university cities, and usually have the same treatment options available as the general population. However, in British universities, there are several additional support and welfare systems specifically for university students, including medical, tutorial/pastoral support, counselling, and disability support services (Phippen, 2010). Other services also have a role in managing student health and well-being

(e.g. sports facilities). The services more aligned for students' mental health are discussed in more detail.

1.4.1 Primary healthcare services

1.4.1.1 *General practitioners*

Students can register with a general practitioner (GP) at their local primary care service and access them as their first port of call for any health issue. GPs refer to secondary and tertiary specialist healthcare services as necessary, although the incompatibility between long waiting times and the academic year means students may not be living at their term-time accommodation at the right time to receive these services (Leach & Hall, 2011). GPs working in university-based or allied primary healthcare services may have a greater understanding of students' health needs (Leach & Hall, 2011). Using NICE guidelines, GPs can typically manage the majority of common mental health issues (e.g. depression, anxiety) that present in primary care, and may refer to university-based counselling services (Bower & Gilbody, 2005; Leach & Hall, 2011). GPs' training may affect their ability to manage and treat young people's mental health difficulties, and GPs can face difficulty in identifying whether mental distress is a normal development or indicates a long-term mental disorder (Roberts, Crosland, & Fulton, 2013). Similarly, young adults may perceive no need to use medical terms to describe their emotions (Biddle, Donovan, Gunnell, & Sharp, 2006).

Qualitative studies have reported young adults and adult populations hold similar perceptions towards mental health help-seeking from GPs (Dew et al., 2007; Leavey, Rothi, & Paul, 2011). Young users (12-25 years) of British mental health services felt it was unhelpful for services to medicalise their emotional and mental difficulties, and disliked the limited continuity of care (Plaistow et al., 2013), which may affect the quality of the doctor-patient relationship (Leavey, et al., 2011). They also felt their concerns would not be taken seriously and would be “fobbed off” with unwanted medication. Young people experiencing elevated mental distress described not perceiving GPs as suitable help sources for mental distress: they felt GPs were only helpful for physical health issues, lacked understanding of mental health, and given its reduced visibility, felt mental distress was not treatable using medical treatments (Biddle, et al., 2006). In one study, adolescents (12-19 years) felt the factors which best assisted their professional help-seeking related to being given sufficient explanations and information, and that the professional actively listens to them, is sympathetic to them, and understands the young person’s concerns (Freake, Barley, & Kent, 2007). Positive past experience of seeking help or beneficial consultations with professionals are also facilitators for young people (Gulliver, et al., 2010).

1.4.1.2 *Medication*

GPs are the main gatekeepers to provision of anti-depressants, and opinions about medication may overlap with people's attitudes towards healthcare professionals (Anderson & Roy, 2013). Reavley & Jorm (2012) suggest a "belief gap" between the general public and healthcare professionals about the helpfulness of medication. Medication is often negatively perceived within the general public; concerns about side effects and effectiveness, perceived lack of control due to medication, and perception that they treat symptoms and not causes of depression, are common beliefs (Jorm, Christensen, & Griffiths, 2005; Pestello & Davis-Berman, 2008; Stone & Merlo, 2011). Medication can help individuals recover and empower their health, but may also be seen as oppressive and unhelpful (Pestello & Davis-Berman, 2008). Young people may have better understanding and more positive attitudes towards anti-depressants due to increased awareness through mental health promotion campaigns (Reavley & Jorm, 2012), but they also hold contrasting and polarising views about using medication (Biddle, et al., 2006; Kranke, Jackson, Floersch, Townsend, & Anderson-Fye, 2013; Stanley, Mallon, Bell, & Manthorpe, 2010). A small student cohort felt overwhelmingly positive about their use of psychiatric medication; they felt empowered and perceived medication as helping control and improve their functioning, alleviate their symptoms, and contributed to their self-management (Kranke, et al., 2013).

Actual treatment experience may differ greatly from treatment expectations. Students with prior experience of treatment have reported feeling more positive about help-seeking and treatment, or be more likely to believe specific treatment options are helpful for depression (Eisenberg, Golberstein, et al., 2007; Stone & Merlo, 2011). Ensuring young people are educated about treatments, have access to non-pharmacological help and have the skills to use other effective self-management strategies is important, given the concerns they may have. An RCT of a consumer guide detailing 45 medical, psychological, lifestyle and alternative treatments for depression found those who received the guide endorsed a greater number of interventions as “helpful”, in comparison to attention controls (Jorm et al., 2003). A third (35.8%) stated they ‘did something differently’ due to the guide, and 25% consequentially had tried self-help. However control participants also reported some improvements in perceived intervention helpfulness. Psycho-education can be an effective strategy in improving beliefs about treatment effectiveness, and may benefit students by helping them make informed decisions about managing their mental health.

1.4.2 The tutor/pastoral system

The tutorial system within British universities involves assigning a “tutor”, who is a member of the academic staff, to each student, thus providing ongoing academic and personal guidance for the student (Owen, 2002). Tutors are a first contact for students

wanting to disclose and discuss their academic and personal issues, and can signpost to university services (Owen, 2002). While this is similar to tutors in pre-university education, there are some differences. Due to students' increased autonomy, tutors may be less observant and often do not play a large role in students' lives (Owen, 2002). A lack of universal tutorial care means students experience wide variation in the allocated one-to-one time they receive and quality of tutor-student relationships, and some tutors may not provide pastoral care at all (Chew-Graham, Rogers, & Yassin, 2003; Leach & Hall, 2011; Owen, 2002; Taylor, 2007). Tutors working within academic disciplines related to care (e.g. nursing) reported using their expertise to benefit distressed students (Stanley & Manthorpe, 2001).

Due to the increased student numbers, alongside increased administrative and research responsibilities, academic staff with tutorial roles now have reduced time to provide pastoral care (Demery, Thirlaway, & Mercer, 2012; Stanley & Manthorpe, 2001). This limited time may impact upon development of the tutor-student relationship; students may need to know their tutors before seeking help from them (Owen, 2002). Students may perceive their tutors as not being approachable due to their lack of time, or feel guilty about contacting them (Owen, 2002). Limited contact may affect early detection of students' difficulties, but tutors themselves may have insufficient training to respond to students' mental health difficulties (Owen, 2002). This is important, as tutors can potentially

provide an 'in house' alternative to professional help, and can also support students in accessing professional help (Stanley & Manthorpe, 2001). However students may find it difficult to discuss personal issues with their tutors. Nearly two-thirds of an Australian student sample reported non-disclosure due to concerns about being judged, stigmatised, or feared not being taken seriously by academic staff (Martin, 2010). Not wishing to disclose to tutors may relate to young people's preference for self-reliance and need for autonomy, as well as limited knowledge about what tutors can do to help them.

1.4.3 Disability support and mental health advisors

Disability services support students who self-define as having a disability and have disclosed it to the university (Phippen, 2010). The Disability Discrimination Act (DDA) is a key piece of legislation ensuring individuals with disabilities are not discriminated against across all aspects of life, including within higher education (Phippen, 2010). 'Disability' encompasses a wide range of conditions affecting the individual's functional ability to perform daily tasks, and includes mental disorders (Phippen, 2010). The DDA means universities should make reasonable adjustments to help counteract students' disability-related impairments which may place them at a disadvantage; for mental disorders, this can include providing assistive technologies, mentor support and alternative assessment arrangements (Redpath et al., 2012). Students can apply for

Disabled Students Allowance (DSA) to help them access these reasonable adjustments (Phippen, 2010). Students with mental disorders may not perceive their condition as being a disability, meaning they perceive themselves as ineligible for support (Quinn, et al., 2009).

Adjunct to disability support, Mental Health Advisors (MHAs) are increasingly being employed within British HEIs. Provision of these, their responsibilities, and their named roles may vary by institution (Phippen, 2010). MHAs support management of students' mental health within the academic environment (Tinklin, Riddell, & Wilson, 2005), which typically involves providing individual support to students with diagnosed or emerging mental health difficulties, plus liaison and advocacy with relevant university staff, university counselling and NHS services (Phippen, 2010). Limited evidence suggests students find MHAs to be a highly valuable and positive source of support in helping them manage their academic workload and mental health (Tinklin, et al., 2005).

1.4.4 University-based counselling services

University-based counselling services have been established in UK HEIs for nearly forty years; the majority of institutions have counselling services for salient issues affecting students and staff (Phippen, 2010; Stallman, 2012). This is seen as a more accessible route for students to seek counselling, which otherwise may go through the NHS or private healthcare services and involve long waiting times or costs (Leach & Hall, 2011). Annually, approximately

4% of the student body is seen by counselling services (Royal College of Psychiatrists, 2011); this number may reflect counselling services' available resources and personnel, rather than student need (Phippen, 2010). Person-centred, psychodynamic and integrative counselling approaches are commonly used in university counselling services (Connell, Barkham, & Mellor-Clark, 2008; Phippen, 2010). These services often charge minimal or zero fees, are usually located on university campuses, and understand student-specific issues (Stallman, 2012). Over a five year period, a 33% rise in student demand for counselling was reported in British HEIs (Froio, 2013). Historically, counselling would help students deal with issues around adjustments, relationships and developmental issues; anecdotal evidence suggests counsellors are now managing more severe mental health issues (Phippen, 2010; Royal College of Psychiatrists, 2011). Counselling services may have difficulty meeting demand due to budget constraints and insufficient personnel (Phippen, 2010; Stallman, 2012). NICE guidelines recommend cognitive behavioural therapy (CBT) for depression, but university-based counselling services may be limited in their numbers of CBT-trained counsellors; students wanting CBT may be placed on long-waiting lists for NHS-delivered psychotherapies (Phippen, 2010). Some services have utilised online resources (e.g. integrating/promoting internet-based interventions) to help meet their need (Royal College of Psychiatrists, 2011), and some also

use email-based counselling for students who might not access face-to-face appointments.

There is evidence, from the UK and USA, supporting the effectiveness of university-based counselling: it helps alleviate students' psychological distress, enhances their university experience, helps them learn skills for future employment, and aids students' academic performance and retention in university (Connell, et al., 2008; Lee, Olson, Locke, Michelson, & Odes, 2009; Wallace, 2012; Wilson, Mason, & Ewing, 1997). Findings from a large British student sample (N=5537) showed students felt counselling provided a 'safe place' for help within the challenging university environment, helped them develop greater understanding of themselves, and improved their ability and confidence to cope (Wallace, 2012). Aspects of counselling which students did not find helpful were mainly related to service characteristics, such as the number and length of sessions, waiting lists, and the type of counselling provided.

Despite this being more accessible than other services, students may have cognitive barriers hindering seeking out counselling. A small student sample reported mixed opinions about counselling, with many holding negative attitudes and misperceptions about what it involved (Curtis, 2010). Preferring to use informal help sources, not perceiving difficulties as serious, preference for self-reliance and difficulties talking about mental well-being were highly-endorsed reasons hindering seeking counselling in undergraduate

Indonesian students (Lukito Setiawan, 2006). Likewise facilitators to use included having assurance of confidentiality, being aware that counsellors were trained to deal with student matters, and awareness of its benefits.

1.5 The role of mental health literacy

Having the ability to effectively identify mental health difficulties is essential given the high lifetime risk of developing a mental disorder; it is likely that a person themselves, or someone they know, will experience significant mental distress (Jorm et al., 1997). Mental health literacy (MHL) has emerged as a paradigm referring to lay beliefs of mental health disorders (Jorm, et al., 1997; Mond, 2014; Swami, Papanicolaou, & Furnham, 2011). MHL is a multifaceted concept which encompasses lay beliefs, knowledge and attitudes relating to mental disorders, which aid the recognition, management and prevention of mental disorders (Jorm, et al., 1997). It also looks at the structures and relationships between these factors (e.g. relationships between perceived causes and treatment options) (Furnham & Telford, 2012). There are several key dimensions contributing to MHL, namely the knowledge of, and attitudes and beliefs relating to:

- Mental health disorders, including identifying specific disorders, risk factors and causes

- Recognition and identification of mental health difficulties and disorders
- Ability to seek out information about professional help/treatments and self-help
- Self-help strategies for managing mental health
- The skills to sufficiently support others with a mental health difficulty

(Jorm, 2012; Jorm, et al., 1997; O'Connor, Casey, & Clough, 2014)

Many of these factors relate to determinants found in socio-cognitive health behaviour models and help-seeking theory. The MHL concept was developed to direct attention to mental health: in comparison to physical health problems, it was felt the public had limited understanding of mental health (Mond, 2014). MHL extends upon health literacy, which is a multi-faceted concept relating to the cognitive, personal and social skills that affect an individual's abilities to access, comprehend and apply information to their own health (Francis, Pirkis, & Dunt, 2002). These two concepts are not completely synonymous, as health literacy focuses upon traditional literacy elements (e.g. reading, writing), compared to MHL's focus upon knowledge, attitudes and behaviour (Ganasen et al., 2008; O'Connor, et al., 2014). Individuals with limited knowledge of mental disorders or evidenced-based treatments are perceived as being 'mental health illiterate' (Ganasen, et al., 2008). Ganasen et al. (2008) suggest MHL may be less relevant in developing countries, as cultural and spiritual sources may be more influential

upon mental health-related beliefs and knowledge. Critique of MHL is fairly limited: Mond (2014) comments MHL was “neither radical nor new”, but provided a more methodological way to investigate person-based factors affecting mental health and help-seeking. The single term allows us to easily refer to the multifaceted nature of lay understandings, and there is no alternative model or name used to describe similar concepts (O’Connor, et al., 2014).

An individual can have different lay beliefs and literacy for different mental disorders: they can be perceived through medical and/or psychosocial aetiological approaches, and treatments are usually perceived in line with these (e.g. medication for biological causes) (Furnham & Telford, 2012; Samouilhan & Seabi, 2010). Self-recognition of symptoms is an important aspect of MHL, as it affects early detection and predicts help-seeking behaviour (Wright, Jorm, Harris, & McGorry, 2007). Furnham & Lousley (2013) found variation in university students’ recognition of eight anxiety disorders; OCD and PTSD were more likely to be correctly labelled, while GAD and panic disorder were least likely to be recognised as distinct conditions. Compared to physical health, recognising mental disorders may be more difficult due to their intangible and ‘invisible’ nature; the behavioural aspects of mental distress (e.g. social withdrawal) may be more noticeable than the cognitive and emotional facets of a mental disorder in recognising a mental health problem (Melas, Tartani, Forsner, Edhborg, & Forsell, 2013). Lay beliefs influence help-seeking behaviour, adherence to treatment,

management of mental disorders, and stigmatising attitudes (Mackenzie, et al., 2014; Swami, et al., 2011). Likewise, MHL influences self-management of mental health: 'self-management' refers to the strategies used by an individual to help their mental health difficulties, and can include using professional help and treatment (Jorm, 2000).

1.5.1 Exploring mental health literacy

Exploring MHL can be difficult as it consists of several concepts requiring different measurements. There is variation in how MHL is measured: some measures produce a score indicating a quantitative level of MHL, whilst others do not use score-based data. These issues have been synthesised in a recent review (O'Connor, et al., 2014). Vignettes and mixed methodologies are the two approaches commonly used to explore MHL. For the latter, this includes multiple choice questionnaires, Likert scales, dichotomous questions - or a combination of these (O'Connor, et al., 2014). Vignette methodologies, which describe a hypothetical 'case study' character experiencing symptoms of a mental disorder, are the most popular method used (O'Connor, et al., 2014; Swami, et al., 2011). They are used to explore participants' recognition of a mental health problem, interventions they would recommend and their perceived helpfulness, and actions they take to help the character in the vignette (Jorm, et al., 1997; Reavley & Jorm, 2011b). Vignettes are used as a proxy for the individual's own attitudes, beliefs and help-seeking intentions. This can be problematic as it is uncertain how

participants' intentions for a vignette translate to their own help-seeking (Burns & Rapee, 2006). Likewise vignettes are not standardised across all studies (Sai & Furnham, 2013). Vignettes are usually based on medical classifications, but their length and detail may affect findings. Sai & Furnham (2013) found differences in the diagnostic labels assigned to six separate vignettes describing depression and schizophrenia respectively, as well as recommended treatments and how participants would help the person. Also, this methodology does not often produce a 'score' indicating level of MHL, making cross-study comparisons difficult (O'Connor, et al., 2014).

Other methods applied to measuring MHL include: identifying true and false symptoms of mental disorders (Lauber, Ajdacic-Gross, Fritschi, Stulz, & Rössler, 2005); rating familiarity of real and fabricated mental disorders (Swami, et al., 2011); and rating awareness of mental disorders and beliefs about aetiology and treatments (Furnham, Cook, & Batey, 2011; Swami, et al., 2011). There have been limited attempts at using developed measures, such as the *Mental Health Literacy Questionnaire* (Davis, et al., 2008), the *Friend in Need Questionnaire* (Burns & Rapee, 2006) and the *Questionnaire of Assessment of Mental Health Literacy* (Loureiro et al., 2013). Applying measures allows MHL to be measured on a continuum and aids cross-study comparisons (Reavley, Morgan, & Jorm, 2014). Standardised measures do not eradicate use of vignettes, as participants may be presented with vignette(s) prior to

measurements. Reavley et al. (2014) developed six similar scales to explore recognition and intervention/treatment beliefs for six mental disorders; the scales only explore two MHL aspects, and as such do not give an overall picture of MHL. The variation of methodologies could affect the validity of measuring MHL and the generalisation of findings; for example, findings relating to recognition of depression and schizophrenia are variable, potentially due to methodological differences (Sai & Furnham, 2013).

It may be difficult for one self-report measure to capture the whole MHL construct. Through systematically reviewing thirteen studies which developed score-based MHL measures, O'Connor et al. (2014) found the majority assessed a minimal number (one to two) of the seven MHL aspects. Recognition of mental disorders was commonly investigated (N=8 studies), with four publications also looking at attitudes affecting recognition and help-seeking behaviour. The differing methodologies, types of data collected, and variation in aspects measured within each study, call into question the validity of measuring this paradigm (O'Connor, et al., 2014). Several measures may be needed to measure MHL. The *Attitudes Toward Seeking Professional Psychological Help Scale* [ATSPPHS] (Fischer & Turner, 1970) explores attitudes towards seeking professional help for mental health issues. The ATSPPHS has been widely applied in several populations and has evidence supporting its psychometric validity and reliability (Elhai, Schweinle, & Anderson, 2008; Mackenzie, et al., 2014). The measure has twenty-nine items

relating to stigma of seeking help, need for help, openness in talking about psychological problems, and personal confidence in professionals (Mackenzie, et al., 2014; Rickwood, et al., 2012). A cross-temporal meta-analysis of 22 North American student-sampled (n=6796) studies which used the ATSPPHS found student' attitudes towards seeking help have become more negative over time (Mackenzie, et al., 2014). ATSPPHS scores declined by almost one Standard Deviation over a forty-year period. The authors suggest health promotion efforts have led to increased acceptance of the medical model and changed attitudes towards pharmacotherapy, which subsequently may have increased mental health-related stigma. Likewise increased negative attitudes could be related to the Cycle of Avoidance model (Biddle, et al., 2007); young people may be normalising higher levels of mental distress, meaning they may have more negative attitudes towards help sources.

Studies vary in how they question participants' MHL. Several Australian studies exploring young people's perceptions of the usefulness of help sources have presented participants with a checklist of interventions (Jorm, Morgan, & Wright, 2008; Reavley & Jorm, 2011b; Reavley, McCann, & Jorm, 2012b), while others have asked open-ended questions (Burns & Rapee, 2006). Checklists allow easier comparison between populations (Reavley, et al., 2014), but using closed questions might lead participants into thinking the vignette character definitely has a mental disorder (Sai

& Furnham, 2013), while checklists might prompt participants to consider interventions they would not have thought of without a prompt. Comparing studies can be further confounded by the type of data, e.g. qualitative answers vs. dichotomous measures (O'Connor, et al., 2014).

1.5.2 Mental health literacy of young people

Anthony Jorm, who originally defined MHL, has been instrumental in conducting several studies exploring MHL in Australia. This includes three general population national surveys of adults' MHL (Reavley, et al., 2014), and several studies focusing on young people (Jorm, Morgan, & Wright, 2010; Jorm, Wright, & Morgan, 2007a; Wright, et al., 2007). Using telephone-based interviews, in 2006 Jorm & Wright (2008) randomly presented N=3746 young Australians (12-25 years) with one of four vignettes describing either a male or female young person experiencing symptoms of depression, depression and alcohol misuse, social phobia, or psychosis. A large dataset was gained, with further data attained through replication in 2011 with another N=3021 young Australians (Yap, Reavley, & Jorm, 2012a). Almost half (48.6%) in the more recent study were university students. From this dataset, this research group has several publications exploring young people's beliefs about prevention of mental disorders (Jorm, et al., 2010; Yap & Jorm, 2012); help-seeking intentions and barriers for mental health problems (Yap, Reavley, & Jorm, 2013); beliefs about, intentions towards, and use of, mental health first aid (MHFA) (Yap, Wright, & Jorm, 2011a);

and intention to use, and beliefs about, the effectiveness of interventions for mental disorders (Jorm & Wright, 2007; Jorm, et al., 2007a; Yap, Reavley, & Jorm, 2012b). This includes analyses comparing young people's MHL to their parents (Jorm & Wright, 2007; Yap & Jorm, 2012) and healthcare professionals (Jorm, et al., 2010). Further evidence comes from another Australian telephone-based interview study with N=1207 12-25 year olds (Wright et al., 2005). Data from this has been used to explore relationships between accurate recognition of depression and psychosis, help-seeking and treatment beliefs (Wright, et al., 2005; Wright, et al., 2007). Overall, the MHL findings from these three large samples show:

- Correct identification of depression varied by vignette: 73.5% correctly identified 'depression' in vignette describing depression only; 76.5% in vignette describing depression and substance abuse; and 83.6% in vignette describing depression with suicidal thoughts. For those who saw depression, depression with substance abuse or depression with suicidal thoughts vignettes: >80% stated they would seek help if they were experiencing a similar problem. Depression with suicidal thoughts and PTSD were perceived as problems in need of most help.
- Help sources perceived as most helpful were close friends, followed by GPs and counsellors.

- Most endorsed barrier to help-seeking is embarrassment and shyness.
- For depression, vitamins perceived as more helpful than antidepressants.
- For all vignettes: exercise/physical activity most helpful self-help intervention; support groups, relaxation training, and reducing use of alcohol/substances/cannabis also highly helpful.
- MHFA actions perceived as most helpful: listening/talking to person in an understanding way; encouraging professional help; gathering friends around person to cheer them up; encouraging exercise/physical activity.
- Actions perceived as most helpful to prevent development of mental disorders: maintaining contact with friends/family; engaging in relaxing activities; keeping physically active; avoiding stressful situations; reducing intake of/not using alcohol, substances or cannabis.
- For depression, 78.9% stated they would be “fairly” or “very” confident in seeking out help from their nominated help sources.

When referring to young people’s MHL, many publications refer to these three samples. They were large general population samples which have been replicated, clearly measured several MHL aspects and have been analysed in multiple ways. However these may have reduced generalisability to other Western populations. Within

Australia, there has been greater efforts to improve the public's MHL (Jorm, 2012; Reavley & Jorm, 2011a). Anecdotally, Australian researchers also appear to be at the forefront of several online intervention programmes to improve the general population's mental health. Due to this, Australians may be more exposed to mental health promotion than in other Western countries.

The MHL of individual mental disorders has been explored in several British studies by Furnham and colleagues; many have used vignette methodology (Furnham, Abajian, & McClelland, 2011; Furnham et al., 2014; Furnham & Carter Leno, 2012; Furnham & Dadabhoy, 2012; Furnham & Lousley, 2013; Furnham & Wincelhaus, 2012; Koutoufa & Furnham, 2014). Participants within Furnham's studies have tended to be young adults and been through higher education (Furnham & Telford, 2012), and his studies exploring lay beliefs of personality disorders, anxiety disorders and OCD involved samples wherein a considerable component (33%-75.4%) were university students (Furnham, Abajian, et al., 2011; Furnham & Lousley, 2013; Furnham & Wincelhaus, 2012; Koutoufa & Furnham, 2014). It is difficult to know whether these findings are fully transferable to university student populations. There are some contrasts between these two research groups; Jorm and colleagues' tend to focus on a wider population, and investigate literacy of several mental disorders. Furnham often uses smaller samples and focuses on literacy of specific disorders and their cross-cultural variation. Both research groups have used vignettes, but Furnham

has also used other methods. Due to these sampling and methodological differences, there may be some differences in the MHL findings.

1.5.3 Mental health literacy of university students

Studies sampling university students only have found similar findings to those above. Appendix 2 outlines eighteen studies which have explored MHL aspects in university students. Five used vignette methodology, with others applying standardised measures, rating checklists, or qualitative methodologies. How the vignettes and measurement items were expressed and phrased may account some variability in findings, but there does appear to be some convergence of the findings.

University students are highly educated, and are likely to hold some degree of knowledge relating to mental health. Findings suggest students are able to recognise depression. The majority (>85%) of Swiss students were able to correctly identify three symptoms of depression presented to them via checklist, and also identified false symptoms (Lauber, et al., 2005). Nearly two-thirds of students had either heard of depressive disorder (Furnham, Cook, et al., 2011) or were able to identify depression in a telephone-delivered vignette (Reavley, et al., 2012b). However in another study, only 49.9% of students identified depression in a vignette (Furnham, Annis, & Cleridou, 2014). Females reported better recognition of mental disorders (Furnham, Annis, et al., 2014; Furnham, Cook, et al., 2011; Lauber, et al., 2005; Reavley, et al., 2012b; Youssef et al.,

2014). Four studies suggest those with personal experience, either experiencing a mental health problem themselves or through someone else, had better knowledge and/or recognition (Curtis, 2010; Furnham, Annis, et al., 2014; Lauber, et al., 2005; Youssef, et al., 2014).

Beliefs about perceived helpfulness of interventions were explored in four publications. Of these, three American studies were limited in the interventions they assessed. The findings from these three studies suggest students, regardless of their depressive or anxiety symptomology, had similar beliefs about the helpfulness of therapy/counselling and medication (Downs & Eisenberg, 2012; Eisenberg, Golberstein, et al., 2007; Eisenberg, Speer, & Hunt, 2012). Australian students in Reavley et al. (2012b) were presented with a list of interventions for depression. Similar findings emerged for the perceived helpfulness of medication: anti-anxiety medication was perceived by 57% and anti-depressants by 54% as being helpful. However many professional sources and self-help interventions (e.g. physical activity, meditation) were rated as more helpful than medication.

Stigma, seeing disclosure and/or mental health problems as a “weakness”, or concerns about judgements, are attitudes and barriers hindering students’ help-seeking (Chew-Graham, et al., 2003; Curtis, 2010; Downs & Eisenberg, 2012; Ey, Henning, & Shaw, 2000; Stanley, et al., 2010). This is in line with a recent

review of barriers hindering young people's mental health help-seeking (Gulliver, et al., 2010). Other student concerns included time pressures to seek help/receive treatment, uncertainty about treatment effectiveness, preferences for self-reliance, its effects upon future career plans, perceiving the problem as minor or transient, and uncertainty about symptoms' seriousness. Systematic barriers to access were less endorsed (Czyz, et al., 2013; Downs & Eisenberg, 2012; Ey, et al., 2000). Normalisation of mental distress in university also affected help-seeking (Downs & Eisenberg, 2012; Eisenberg, et al., 2012). The environmental context of student life (e.g. surrounded by similar peers, demanding workload) may influence their perception about symptom severity and its normality.

Less attention has been focused on facilitators of students' mental health help-seeking. In an American sample, encouragement from others to seek help was the most endorsed facilitator (Downs & Eisenberg, 2012). This, alongside positive past help-seeking experiences and established trustworthy relationships with professionals, were identified in Gulliver et al. (2010) as important facilitators. Social support appears to be important for help-seeking, but as stigma is a predominant barrier, there may be conflict in using peer support if stigma comes from others.

1.5.4 Improving students' self-management of their mental health

The large body of research shows many young people do not seek out professional help for their mental health difficulties. This is often

due to attitudinal and structural reasons, which include personal preferences for self-reliance, holding stigmatising attitudes towards mental illness and help-seeking and lack of perceived need for help (Gulliver, et al., 2010). Given many mental health disorders reach their onset and developmental peak during young adulthood (Royal College of Psychiatrists, 2011), it is important for young people to be attentive to their mental health.

Mental health promotion strategies can be used to improve young adults' management of mental health; these strategies tend to concentrate upon improving mental health outcomes and maintaining positive well-being, but also prevention of mental disorders (Kalra et al., 2012). Promotion strategies can be used to target and alter barriers that hinder young adults' abilities to manage their mental health (e.g. improving recognition of mental health problem), as well as changing their personal capabilities and skills for independent self-management (Kalra, et al., 2012). National-level interventions have also shown short-term improvements in societal knowledge, beliefs and attitudes about mental health (Dumesnil & Verger, 2009). These campaigns could be one reason why, in comparison to older people, younger populations have better identification and understanding of mental health problems (Farrer, et al., 2008).

Interventions based on MHL should help improve young people's recognition and appraisal of symptoms, knowledge relating to help

sources, self-help and causes of mental health problems, and improving their attitudes towards mental health and help-seeking, and subsequently change their stigmatising beliefs (Gulliver, et al., 2010; Kalra, et al., 2012). Such interventions should be mindful of the identified needs of young people, particularly their self-reliance preferences; in line with this, self-management and self-help interventions could be promoted to young people to help them independently manage their mental health (Czyz, et al., 2013; Gulliver, Griffiths, & Christensen, 2012). Likewise young people's limited recognition, normalisation of symptoms and help-negation, means interventions could help improve appraisal of mental health problems, and improve their perceived importance of seeking appropriate help (Czyz, et al., 2013; Downs & Eisenberg, 2012; Wilson & Deane, 2010).

A review of eight interventions, six of which were focused on changing MHL constructs, found the majority helped to improve help-seeking attitudes but had limited effect upon subsequent behaviour (Gulliver, Griffiths, Christensen, & Brewer, 2012). All trials in this review (four with student samples) reported significant improvements post-intervention on at least one help-seeking measure, in comparison to controls. Although the authors could not provide strong conclusions due to small numbers, they suggest that attitudes may be the help-seeking predictor most amenable to change. However, due to limited follow-up, long-term outcomes are

not known, and positive attitudes towards help-seeking may not necessarily equate to matched help-seeking behaviour.

Likewise, efforts have been made to improve university students' help-seeking, with interventions trialled in several formats including seminars/lectures, mass-media, and university-based promotion campaigns (Merritt, Price, Mollison, & Geddes, 2007; Sharp, Hargrove, Johnson, & Deal, 2006; Theriot, 2013). Several lifestyle behaviours (e.g. exercise) are beneficial for mental health, and student-based interventions may also target these to improve mental health outcomes (Kalra, et al., 2012; Mailey et al., 2010). Particular efforts may be focused upon medicine students given their status as future doctors; they will have contact with patients experiencing mental health problems and could project stigmatising attitudes in delivering medicine (Papish et al., 2013). However many interventions have not used relevant health behaviour theory in their development, and so may not be adequately targeting help-seeking determinants (Demyan & Anderson, 2012; Gulliver, Griffiths, Christensen, & Brewer, 2012).

1.6 Using the internet to deliver interventions to students

1.6.1 Background to internet interventions

Several types of intervention fall under the "internet interventions" umbrella, and several terms are used interchangeably (e.g. e-health', 'e-therapy') (Barak, Klein, & Proudfoot, 2009). With the

advent, popularity, and increased accessibility of digital technologies within the past thirty years, computer-delivered and internet-enabled interventions have been increasingly developed and trialled (Proudfoot et al., 2011). Internet-enabled technologies are considered to be more inexpensive compared to face-to-face counterparts, can reach a wider audience who might not access traditional services, and have increased accessibility through reduced geographical constraints (Christensen & Griffiths, 2002). Through several reviews, internet interventions have evidence supporting their effectiveness in improving cognitive, behavioural and emotional/psychological outcomes (Jones, 2013).

Programming technology means these interventions can be delivered using a range of multimedia formats and interactive features to engage users and facilitate intervention efficacy (Carey, Scott-Sheldon, Elliott, Bolles, & Carey, 2009; Jones, 2013). Interventions vary in their delivery: users may interact with them once or on several occasions; they may be available to everyone or only within research trials; and they can vary in their level of interactivity and navigational functionality. These numerous aspects means materials can be presented in different ways that align to users' preferences, and may be more user-friendly than traditional formats (Jones, 2013). There have been increased efforts in delivering internet-based mental health interventions, such as through websites, emails and embedded videos (Gulliver, Griffiths, Christensen, & Brewer, 2012).

Furthermore, internet interventions can be developed with behaviour change, help-seeking, or psychotherapeutic theory in order to target the factors deemed salient for positive change. This identifies the important predictors of change (e.g. attitudinal barriers), and applies processes underlying positive change (e.g. modelling, increasing perceived control) (Webb, Joseph, Yardley, & Michie, 2010). For mental health, web-based interventions tend to use such theory to either change important behaviours (e.g. help-seeking, use of self-help), or improve symptomology (e.g. decrease elevated distress).

Much evidence supports the adaptation of cognitive behavioural therapy (CBT) into computerised and/or internet-delivery (often referred to as 'cCBT' or 'iCBT') in improving depression and/or anxiety outcomes (Barak & Grohol, 2011; Froushani, Schneider, & Assareh, 2011; Grist & Cavanagh, 2013; Kaltenthaler, Parry, Beverley, & Ferriter, 2008; Spek et al., 2007). Delivering evidenced-based therapy via the internet can help make treatment more accessible (Griffiths & Christensen, 2007).

The internet and other digitalised technologies are strongly integrated in university students' lives, and are used by them for a number of different reasons: for their academic studies, socialising, work, leisure and health-related purposes (Deatherage, Servaty-Seib, & Aksoz, 2013; Escoffery et al., 2005). In one study, over a third of students stated information found via the internet had a

significant effect on their own self-care of health (Escoffery, et al., 2005). The range of internet-enabled technologies used by university students (e.g. smartphones, tablets, laptops) means this is a highly accessible and reasonable medium to deliver interventions to improve their MHL and help-seeking. Farrer et al. (2013) conducted a review of technology-based interventions to improve mental health outcomes in university students, which included interventions delivered through the internet, audio, virtual reality, videos and computer program, or a combination of these. Twenty-seven studies, detailing 51 interventions, were retrieved, with internet-based interventions present in half. Almost half (n=24) reported statistically significant post-intervention improvement on a relevant outcome measure, when compared to controls. The authors concluded that technology-based interventions provide an encouraging avenue for mental health promotion in university students.

1.6.2 Internet interventions based on MHL

Emails, websites and online programs appear to be the intervention types most often used to improve MHL, and can address individual or multiple aspects of MHL. These appear to be psycho-educational in nature, although some are based on relevant behaviour change or help-seeking theory (Gulliver, Griffiths, Christensen, & Brewer, 2012). MHL interventions may also alter stigmatising attitudes and beliefs towards mental health and help-seeking (Clement et al., 2015).

Costin et al. (2009) delivered a brief email-based intervention ('e-cards'), developed through applying the four-stage help-seeking model (Rickwood, et al., 2005); the e-cards' content was designed to change salient factors affecting help-seeking (e.g. improving persons' recognition of depression, changing perceptions of treatments). Through an RCT, these e-cards were compared to another e-card intervention (basic and less intensive information) and an attention-placebo control group. A sample of Australian young adults (n=348, 19-23 years), screened into "low" and "high" distress groups, were randomly assigned to these conditions and received three e-cards over a three week period. Participants' beliefs about help-seeking, related intentions and behaviour, ability to recognise depression and help-seeking knowledge, were assessed at baseline and post-intervention. Post-intervention, the intervention had no effect upon help-seeking behaviour from informal and formal sources, but did improve intentions to seek help from formal sources, regardless of participants' level of psychological distress. Compared to controls, participants who received the less intensive e-card were more likely to endorse at least one health professional as 'helpful'. There were no associations found between conditions and treatment beliefs, helpfulness of informal sources, or ability to recognise depression. The majority (>90%) reported each intervention e-card as 'helpful', with a similar percentage (>83%) endorsing helpfulness of the basic e-card. Participants may not have perceived the e-cards' content to be relevant to them at that point

in time, meaning they would not have sought help regardless of intervention exposure. Costin et al. state that their findings converge with previous trials which suggests information alone appears insufficient in changing behaviour and altering participants' perceptions of their psychological distress. However the short-term follow-up could explain this limited change; at six-week follow-up, another email-based intervention reported decreases in sub-threshold depression (Morgan, Jorm, & Mackinnon, 2012).

Web-based interventions may be a particular avenue to explore; compared to just emails, websites can provide a wealth of content in one centralised place, and can address many aspects relating to MHL. Barak, Klein & Proudfoot (2009) define web-based interventions as *"a primarily self-guided intervention ... that is executed by means of a prescriptive online program operated through a website and used by consumers seeking health- and mental health-related assistance. The intervention ... attempts to create positive change and/or improve/enhance knowledge, awareness and understanding via the provision of sound health-related material and use of interactive web-based components"*. Even within this category, Barak, Klein & Proudfoot (2009) define three levels of web-based intervention which differ slightly in their content, use of multimedia, interactivity and human support (see Table 2). Below, two website, theory-based MHL-related interventions are described in more detail. These two were chosen due due to their use of theory in their development, and they have

Table 2. Categories of the three different subtypes of web-based internet interventions, as defined by Barak & Grohol (2011).

Subtypes of web-based internet interventions			
Components	<i>Web-based education interventions</i>	<i>Self-help web-based therapeutic interventions</i>	<i>Human support web-based therapeutic interventions</i>
Program content	Inactive education content, largely non-prescriptive and standardised educational content	Structured content designed to change behaviour. Designed to be treatment/prevention/promotion to attempt to create positive cognitive, behavioural or emotional change	
Multimedia use	Primarily static - may use minimal different types of multimedia to communicate content		
Interactivity	Primarily static - may range from zero to two interactive activities for users		
Feedback and human support	Typically zero or partially automated support, but may vary depending on intervention - can range to moderate or high levels of automated or human support	None or partially automated support - no tailored feedback to participants, or receives automated feedback (e.g. diagnostic feedback, reminders). This may vary by intervention - level of feedback is on spectrum of intensity and specificity	Partial human support: level of support is on a spectrum of intensity, ranging from minimal provision (e.g. reminders, support to use intervention) to high provision (e.g. regular contact providing distance or face-to-face feedback and support)

both received some user evaluation.

1.6.2.1 MoodGym, a CBT-based website

MoodGym (a CBT-based website) and *BluePages*, a website providing information about depression and treatments, are two freely-available online resources. These interventions address several depression literacy components (e.g. knowledge about

depression, treatments, self-help); both through *MoodGym* itself as it is a self-guided CBT program, and also through promoting other self-help strategies. A systematic review of twelve trials of *MoodGym* and *BluePages* with adults and adolescents supports their use in decreasing depressive and anxiety symptomology, and also improved adult's depression literacy and use of evidenced-based treatments (Griffiths & Christensen, 2007). Taylor-Rodgers & Batterham (2014) synthesised content from other evidenced-based anxiety, depression and suicide awareness sources to produce a brief psycho-educational website designed to improve MHL literacy, stigma, help-seeking attitudes, and intentions, and compared it an attention control. An RCT involving Australian university students over a three-week period found those

assigned to the psycho-educational website reported greater reduction in stigmatising attitudes, and improved changes in help-seeking attitudes and intentions to seek help from a GP, compared to controls. Improvements were only found for anxiety literacy, which may be because depression literacy was fairly high at baseline. The authors comment that interactive content (e.g. decision-making tasks) and videos may help increase participant engagement, and could help further improve outcomes.

1.6.2.2 *ReachOut.com, a website-based mental health resource*

Based upon the four-stage process framework model (Rickwood, et al., 2005), *ReachOut.com* is a website developed by Australian

researchers as a form of health promotion, prevention and early intervention for young people. It is Australia's leading online resource for mental health information, with over seven million people having accessed it since its inception in 1998 (Nicholas, 2010). Through providing a vast resource of credible information delivered through several multimedia formats, as well as incorporating a CBT-based game, the website is designed to improve young people's MHL, recognition of symptoms/signs of mental health problems, help-seeking behaviour, resilience and social connectedness with others (Collin et al., 2011). *ReachOut.com* acts as a 'gateway' in helping young people recognise whether they have a mental health problem which requires intervention, and provides support for them to access appropriate help. The original *ReachOut.com* has been adapted for Irish and American audiences (e.g. information about professional help is relevant to each country), and all are freely available to anyone with internet access.

ReachOut.com appears to be helping improve young people's MHL and related help-seeking behaviour (Nicholas, 2010). A cross-sectional survey of users (N=2291) reported the website helped their knowledge of mental health problems and the help available, as well as improving understanding of their feelings (Collin, et al., 2011). Over a third (35.2%) stated the website had helped them to some extent in seeking out professional help, while a large proportion (43.3%) stated it had helped them increase their

confidence, skills and knowledge needed to seek out help. Over half (53%) of those screening for elevated distress stated they accessed *ReachOut.com* due to their current symptoms and were looking for help. A 'one-stop' website allows developers to put content relating to the multi-faceted nature of MHL into one place, and compared to traditional leaflets/booklets, may be more accessible to young people given its ease and privacy of access. Likewise these websites may be in line with young people's preferences for self-reliance. Interventions could also alter perceived social norms about mental health and help-seeking to challenge stigmatising attitudes, as students may over-estimate the perceived presence of stigmatising attitudes in others and often perceive themselves as having low levels of stigma (Downs & Eisenberg, 2012).

1.7 Summary

In summary, it is clear that a substantial proportion of university students experience clinically significant levels of depression. Despite effective treatments being available for depression, many students may have difficulties in assessing their symptoms of depression as being clinically important, and is one reason many do not seek out professional help. To counteract their non-help-seeking, students may prefer to use self-management strategies or seek informal help from their friends. However they may be unaware of what types of self-help can help depression, and students may have difficulties providing appropriate support to a

peer experiencing depression. Website-based interventions provide a useful avenue to improve students' MHL relating to depression, and potentially to improve self-management skills through promoting other evidenced-based interventions (e.g. online CBT programs) and other effective self-help treatments. To promote already-available psychotherapeutic internet-based interventions to students, it is important to explore their potential to improve the mental health of university students through a systematic review.

Online interventions for aiding self-management of student mental health also need to support students' use of available help, including professional health services and informal support networks. Synthesis of the available evidence suggests students may lack sufficient knowledge to enable them to recognise symptoms of depression and use effective self-help strategies, and face many attitudinal barriers to accessing professional help. This needs further exploration, including barriers to help-seeking, the role of peer support and whether support from peers is appropriate for their mental health needs.

In order to develop an effective online intervention to improve students' MHL and self-management of depression, quantitative and qualitative research is needed to give an in-depth understanding of local students' current mental health needs, their perceptions of their information needs in relation to their mental health, their experience of mental health difficulties and preferred self-

management strategies. This research, combined with usability analysis of the developed intervention, is crucial to developing an acceptable and effective evidenced-based online self-management tool for Nottingham-based students with depression.

1.8 Aims of thesis

The aim of this thesis is to develop an evidenced-based online intervention to improve depression literacy and management in local university students. Within this context, “management” refers to help-seeking and use of self-help strategies to manage depressive symptoms. This online intervention will include psycho-education, promotion to web-based online therapeutic interventions for treating depression, and signposting to existing resources. Its development will be informed three applied research projects with students attending the two Nottingham-based universities, a systematic review of web-based interventions for common mental health problems, and through literature review of mental health-related interventions, mental health literacy and help-seeking theory.

As we aim to promote currently-available online therapeutic interventions within the developed intervention, the first study describes a systematic review and meta-analysis of trials of website-based interventions for improving common mental health problems in student populations only. These types of intervention may be a useful avenue for delivery, and the following chapter extends upon the work by Farrer and colleagues (2013).

To explore the mental health of local university students and their related help-seeking behaviour for their mental health, the second study aims to investigate the profile of depressive, anxiety and hypomania/mania symptomology in local university students, its impact upon their mental well-being and their related help-seeking behaviour. This study also aims to explore relationships between screening for elevated symptomology, help-seeking and demographic factors, in order to identify whether there are any subgroups of students who may have poorer MHL and may need specific information within the developed intervention.

Study Three took a qualitative approach to conduct a more in-depth investigation into students' perspectives of changes in their mental well-being since starting university, and their experience and opinions about their mental health and help-seeking. This was to identify factors potentially affecting students' MHL, such as their ability to recognise a possible mental health problem and their beliefs and attitudes regarding professional help and self-help, which could then be addressed within the developed intervention.

The importance of support from friends in helping students manage their mental health led to Study Four, which aimed to identify the quality of students' mental health first aid and ability to support a potential friend experiencing depressive symptoms. This was to identify the kinds of help they would provide, and whether students

needed specific information regarding supporting a friend within the developed online intervention.

Chapter Six describes in-depth the development of the online intervention and how the individual studies shaped its content. It also describes Study Five, which briefly explored the usability and acceptability of the developed intervention.

Chapter Two: Study One – A systematic review and meta-analysis of computer-delivered and web-based interventions to improve depression, anxiety and psychological well-being outcomes in university students

2.1 Introduction

As outlined in the introductory chapter, depression and anxiety are common mental health problems experienced by university students, and can cause impairments and burden during their time at university. The internet is an essential tool for higher education, and is highly accessible to students (Escoffery, et al., 2005; Ryan, et al., 2010). Professional help is not sought by students for many reasons, including personal preferences for self-reliance, and digital technology could provide access to self-help. Students may have favourable preferences towards self-help due to their increased independence and self-reliance during their transition to young adulthood (Rickwood & Bradford, 2012). Internet-based interventions are an approach that may be particularly engaging and useful for university students given their limited help-seeking (Lintvedt, Sorensen, Ostvik, Verplanken, & Wang, 2008; Mitchell & Gordon, 2007; Royal College of Psychiatrists, 2011; Ryan, et al., 2010). Over half of students in an Australian sample with high psychological distress reported strong intentions for using an online program for student well-being (Ryan, et al., 2010). These

interventions provide a useful avenue for improving the mental health literacy, related help-seeking behaviours, and management of depression in students. Internet-based interventions hold many advantages for university students: they can be tailored to the needs of all students but also specific sub-groups (e.g. medicine students); provide a more comfortable private environment to access help (Ryan, et al., 2010); and can be a form of outreach to those who may not access face-to-face services (Taylor & Luce, 2003).

Given their potential to help students, there is a need to identify and synthesise evidence of these interventions for improving common mental health difficulties in student populations. Several British universities offer online counselling, but students still have to engage in help-seeking behaviour to access this and may have stigmatising attitudes towards professional help (Gulliver, Griffiths, Christensen, & Brewer, 2012). Self-guided computer and internet-based resources may help to lessen this stigma and align with self-reliance preferences. The recent systematic review by Farrer et al. (2013) provided a comprehensive narrative appraisal of technology-based interventions trialled in higher education populations. The authors did not conduct meta-analysis due to the variation of technologies. We hope to expand on this by focusing only on website and offline computer-based interventions, and by conducting quantitative meta-analysis. The aim of this review is to explore whether computer-delivered and website-based

interventions are effective in improving depression, anxiety, stress and psychological well-being outcomes in university students. Stress is an important outcome as students are faced with several stressors during their studies, and elevated stress can increase the risk of developing mental health difficulties (Bitsika, Sharpley, & Rubenstein, 2010).

2.2 Methodology

2.2.1 Search strategy and identification of trials

Nine electronic databases, including PsychINFO, CENTRAL, and PsychMed, were searched in March-April 2012, and repeated in June 2013 to update the search. Search terms (Appendix 3) were developed through literature review and related to: internet- and computer-delivered interventions, mental health, and higher education. Several publisher websites, published reviews and intervention studies were hand-searched. There was no restriction in publication year or language. Studies met the following eligibility criteria:

1. The interventions aimed to improve psychological distress, stress, depressive or anxiety symptomology, and administered valid and reliable measure(s) reflecting symptomology. Interventions which addressed aspects of psychological well-being (e.g. sleep) and included a primary mental health outcome were also included.

2. The intervention was delivered via a website or offline computer program, and accessed via computer, laptop or other internet-enabled device (e.g. tablet). Human support was included in the review providing it was delivered by lay persons or non-healthcare professionals and was a complementary component of the intervention.
3. The study was published in a peer-reviewed journal.
4. The intervention was trialled through randomised controlled trial (RCT) design. Trial arms need to consist of an experimental condition and an inactive control (i.e. no-treatment or wait list control) condition and/or an active control and/or comparison intervention. Active control was defined as materials designed to mimic the time and attention received in the main intervention.
5. The intervention was trialled on undergraduate and/or postgraduate students in higher education institutions (HEIs). HEIs were tertiary educational institutions (e.g. universities, colleges).

Secondary outcomes of interest were help-seeking behaviour, diagnosis of mental disorder, and participant attrition. Interventions were excluded if: there was face-to-face human support adjunct to intervention; they were not website-based or offline computer programs; they were online support groups; or were mobile or tablet applications ("apps"). Interventions which utilized computers and/or the internet to facilitate communication (e.g. online

counselling) between health professionals and users were excluded as we wanted to explore whether computer-delivered and website-based interventions were comparable to traditional therapies, and if they had any effects on mental health outcomes in comparison to receiving no treatment. Apps were also excluded as it was felt these were relatively new therapeutic interventions, and mobiles were more likely to be used as a device to display information akin to DVD/video at the time of conducting the search. Online interventions for eating disorders and alcohol/substance use were not included as these have been previously reviewed in students (Bewick, Trusler, et al., 2008; Yager & O'Dea, 2008). Publications were excluded if they focused on mediating effects upon outcome measures only within experimental conditions, or if both intervention and active control/comparison intervention conditions received the same intervention materials and there was no inactive control condition.

A total of 6494 titles and abstracts were retrieved, and their inclusion eligibility was screened by EBD. The full text of 103 articles were obtained for further analysis and coding. Thirty-eight addressed the targeted mental health criteria; 19 were excluded as they did not meet eligibility criteria or presented translation difficulties (Appendix 4). Nineteen articles met inclusion criteria, which included one follow-up (Kenardy, McCafferty, & Rosa, 2006) and two publications reporting the same trial (Arpin-Cribbie, Irvine, & Ritvo, 2012; Arpin-Cribbie et al., 2008); data from both were

extracted and merged into the original studies, resulting in seventeen citations. Figure 3 outlines the search process.

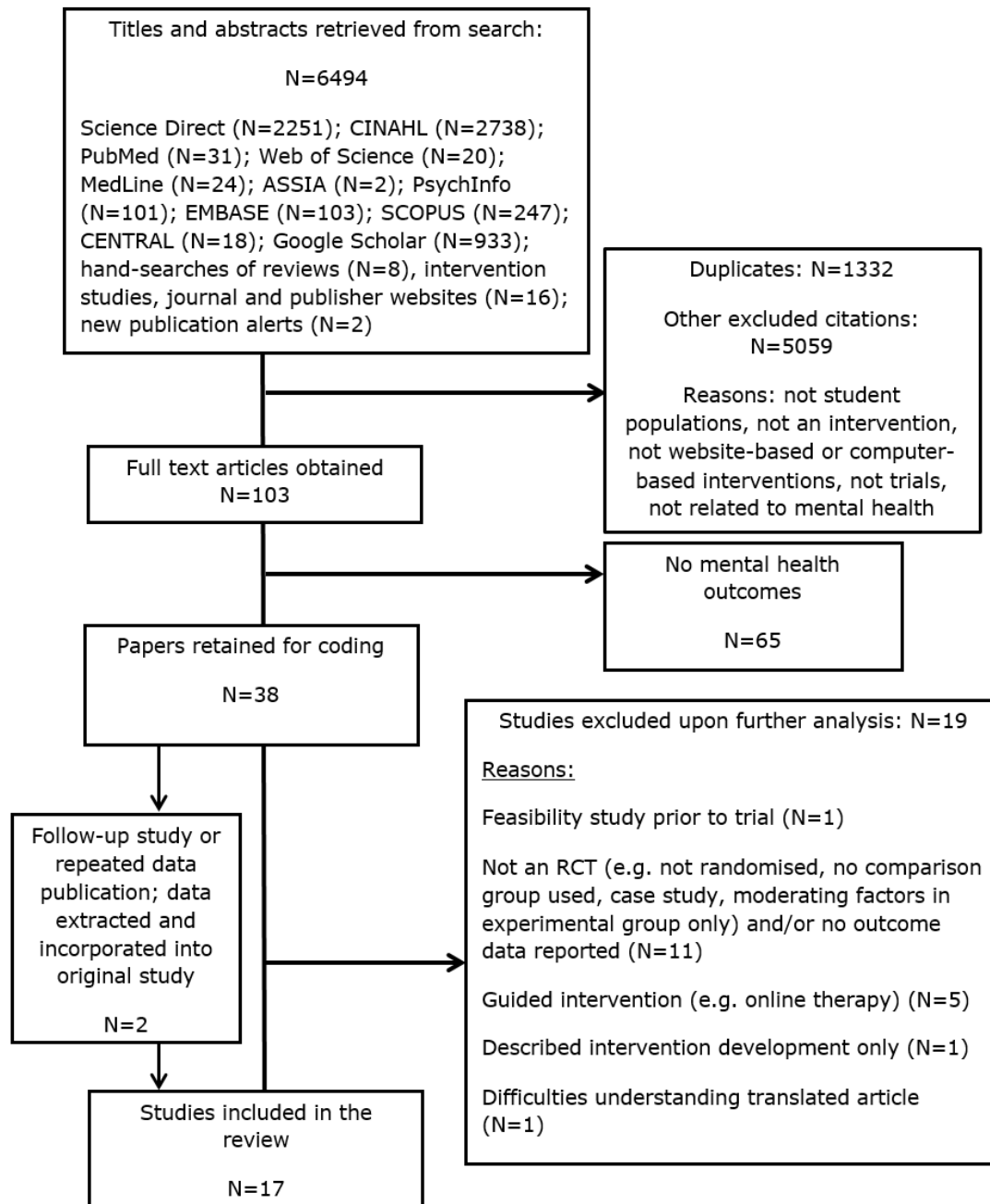


Figure 3. Flowchart outlining process for systematic review and meta-analysis.

2.2.2 Data extraction and assessment

Data extraction was performed using a template based on the Cochrane Review template (Higgins & Deeks, 2008) and the CONSORT checklist for reporting e-health interventions (Eysenbach & CONSORT-EHEALTH Group, 2011). Authors were contacted as necessary to clarify information. Post-intervention means and standard deviations (SDs) data from relevant outcome measures and participant attrition were extracted and inputted into Review Manager ('RevMan') software (The Cochrane Collaboration, 2012).

Interventions were classified by their type of prevention (Mrazek & Haggerty, 1994): *universal interventions* target a whole population regardless of individual risk and do not involve screening; *selective interventions* select individuals at some risk of a mental health disorder but without screening for mental health symptomology; *indicated interventions* target those who screen for some level of mental health symptomology but do not have a diagnosis; and *treatment interventions* are for individuals with a diagnosed mental disorder (Farrer, et al., 2013). For this review, *selective* and *indicated* interventions were collapsed into one category as it can be difficult to decipher whether interventions discretely fit into either category.

The level of human support was coded using previously used categories (Farrer, et al., 2013; Johansson & Andersson, 2012). These three categories were: 1) no-contact intervention (no human

face-to-face or verbal contact for any aspect of study; email contact only with participants) 2) self-administered intervention (human contact for administration of measures only); and 3) semi-guided intervention (human contact ≤ 90 minutes for prompts or reminders, guidance on intervention use and/or support in completing intervention).

The Cochrane Collaboration risk of bias tool (Higgins & Altman, 2008) was used to assess trial quality. This checklist aids understanding of trial quality and does not calculate a quality score. The tool assesses study bias across five methodological domains: sequence generation, allocation concealment, blinding, incomplete outcome data and selective reporting.

2.2.3 Process for meta-analysis

Meta-analyses were planned to explore the effects of interventions upon depression, anxiety, stress and psychological distress outcomes. Outcomes were analysed in three subgroups: 1) intervention vs. inactive control; 2) intervention vs. active control; 3) intervention vs. comparison intervention. If trials conducted ≥ 3 trial arms, trial arms were separated corresponding to the three comparison analyses. In studies using ≥ 2 active control or comparison intervention conditions, the least active control was inputted into analysis. Secondary analyses explored rates of attrition, and effect of year of publication and participant incentives upon outcomes. Continuous data on clinical outcomes are often not normally distributed and extracted data was explored for normality

via presence of skew. This was through multiplying the SD by two; if the mean is smaller than this number, it suggests the data is skewed (Altman & Bland, 1996). RevMan was used for calculating effect sizes and conducting meta-analyses. Standard errors were transformed into SDs by multiplying the standard error by the square root of the sample size. Studies which insufficiently reported their outcome data were not included in meta-analysis. If studies reported more than one type of outcome measure for specific outcomes of interest, the measure most aligned to DSM-IV criteria for depressive and anxiety disorders was analysed.

The Standardised Mean Difference (SMD) is a version of effect size typically calculated in reviews, and is expressed as Hedges' g . SMDs were calculated for each trial arm by subtracting the post-intervention mean of the intervention condition from the post-intervention mean of the comparison condition, and dividing this by the both conditions' pooled SD (Hedges & Vevea, 1996). SMD allows for comparisons across studies wherein they used different psychometric measures to assess the same outcomes (Deeks, Higgins, & Altman, 2008). Inferences of Hedges' g can be made using Cohen's d conventions as small (0.2), medium (0.5) and large (0.8) (Hofmann, Sawyer, Witt, & Oh, 2010).

We anticipated included studies would be heterogeneous due to the different types of preventative intervention, and so would differ on participants' baseline symptomology. To account for expected

heterogeneity, Random Effects Models (RAM) with 95% confidence intervals (CI) were applied throughout analysis. RAM assumes included studies are trialled on different populations and so are calculating different intervention effects (Andersson & Cuijpers, 2009; Deeks, et al., 2008). The I^2 statistic was calculated to explore heterogeneity and is expressed as a percentage indicating its degree; 25% indicates low heterogeneity, 50% suggests moderate and 75% is a threshold marker for high heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003). The Q statistic was also calculated and provides the statistical significance of heterogeneity.

2.3 Results

2.3.1 Intervention characteristics¹

The search yielded 17 studies. The symptomology measured within trials were depression (1-4, 7-9, 11-14, 16, 17), anxiety (1, 3, 4, 7-9, 11, 14, 16), stress (5, 6, 8, 15), psychological distress (5, 10, 16), social anxiety (2) and examination anxiety (13). Some interventions focused on general psychological well-being: improving relationship functioning (3, 4), decreasing elevated perfectionism (1, 14), increasing students' use of mindfulness (5),

¹ For clarity and comprehension of the findings, the 17 included studies will be cited using bracketed Vancouver/numbered referencing in the 'Results' section only. Each number corresponds with a citation presented in Table 3.

improving international students' social support, acculturation and hardiness (10), and increasing use of lucid dreaming to alleviate depression (17). Seven trials were of three interventions conducted on separate samples; therefore there are 14 distinct interventions for review. Table 3 provides a summary of included interventions.

Eleven trials were *selective* or *indicated* interventions: participants were recruited if they screened for specific mental health symptomology or other psychological factors (1, 6- 9, 11-16). Inclusion criteria included: elevated perfectionism (1, 14), elevated stress (6, 15), minimal/mild symptoms of depression and anxiety (7, 16), low/moderate psychological distress (9), elevated anxiety sensitivity (11), elevated psychological distress (12), self-reported examination anxiety (13) and mild/moderate levels of depression, anxiety or stress (8). Five trials were *universal* wherein participants had to: be in ≥ 4 month long romantic relationship (3, 4), be Indian international students (10), have no lucid dreaming experience (17), or have internet-enabled computer access (5). One intervention was *treatment*: participants met DSM-IV diagnostic criteria for social anxiety (2).

Eleven studies contained two trial arms (4, 5, 7, 8, 10-15, 17), with five using three arms (1-3, 5, 9) and one with four (16). Five trials compared intervention to inactive control and either an active control (6) or comparison intervention (1, 2, 9, 16); five trialled the intervention to an active control (4, 7, 10, 13, 15); six trialled

against inactive control (5, 8, 11, 12, 14, 17), and one compared intervention to a comparison intervention and active control (3). Thirteen studies trialled interventions based on CBT (1-4,7-9, 11-16); this included seven studies wherein three interventions were trialled on separate samples (1, 3, 4, 9, 12, 14, 16). Other interventions were based on mindfulness (5), stress management theory and cognitive learning theory (6), and lucid dreaming (17).

Table 3. Summary of included web-based and computer-delivered interventions to improve depression, anxiety, psychological distress and stress conducted in higher education populations.

Study [citation number]	Design, number of arms (N per arm), sample size and study location	Sample demographics and inclusion criteria	Intervention	Length/dosage	Location	Outcome measures	Analysis
Arpin- Cribbie, Irvine & Ritvo (2012) [1]	RCT 3 arms: Intervention (29), CI (26), WLC (25) N=77 One HEI, Canada	Selective/indicated Undergraduate psychology students 70% female, M age 20.1yrs High levels of perfectionism (PCI)	Internet-delivered CBT for perfectionism Self-administered	13 modules over 10 weeks; suggested order for working through intervention (not mandatory)	Own location	CES-D ATQ BAI ASI PSS MPS-F – CM MPS-HF PCI	Completers
Botella et al. (2010) [2]	RCT 3 arms: Intervention (62), CI (36), WLC (29) N=127 Two HEIs, Spain	Treatment Undergraduate and postgraduate students 61 females, M age 24.4yrs (completers only) Met DSM-IV diagnostic criteria for social anxiety/phobia	"Talk to Me": website-based CBT for fear of public speaking Self-administered	Available over 8 weeks, participants exposed to anxious situation through use of embedded videos	Own location	SAD BDI BFNE FPSQ SSPS MS	ITT

Braithwaite & Fincham (2007)* [3]	RCT 3 arms: Intervention, CI and AC N=91 One HEI, USA	Universal Undergraduate psychology students 59% female In romantic relationship of ≥4 months duration	<i>ePREP</i> : relationship functioning intervention Based on CBT Delivered via computer Semi-guided	1-hour computer session followed by weekly standardised emails over 8 weeks Participants had paper copy of computer intervention	Researcher-monitored laboratory	BAI BDI PANAS CTS-2 PRQC CPQ-CC Trust scale	Uncertain
Braithwaite & Fincham (2009) [4]	RCT 2 arms: Intervention (38), AC (39) N=77 One HEI, USA	Universal Undergraduate psychology students 71% female, M age 19.4yrs In romantic relationship of ≥4 months duration	<i>ePREP</i> : relationship functioning intervention (same as Braithwaite & Fincham 2007) Semi-guided	Same as Braithwaite & Fincham (2007)	Researcher-monitored laboratory	BAI BDI CTS-2 CSI	ITT
Cavanagh et al. (2013) [5]	RCT 2 arms: Intervention (54), WLC (50) N=104 One HEI, UK	Universal Undergraduate and postgraduate students 92 females, M age 24.7yrs	<i>"Learning Mindfulness Online"</i> : intranet-based website designed to teach Mindfulness Semi-guided	Available over 2 weeks, 4 standardised reminder emails sent over period	Own location	PSS PHQ-4 FFMQ	ITT

Chiauzzi et al. (2008)* [6]	RCT 3 arms: Intervention (80), AC (80), NTC (80) N=77 Six HEIs, USA	Selective/indicated Undergraduate students 123 females 18-24yrs, experiencing elevated perceived stress (PSS)	<i>My StudentBody-Stress</i> : psycho-educational student-tailored website for stress management - possibly based on cognitive therapy	≥20 minutes at least four times over two week period	Own location	PSS HPLP-II CAS	Uncertain
Cukrowicz & Joiner (2007) [7]	RCT 2 arms: Intervention (81), AC (71) N=238; N=152 analysed 3 HEI, USA	Selective/indicated Undergraduate psychology students 169 female, M age 19.2yrs Minimal/mild symptoms of depression and anxiety (BDI, BAI)	Self-administered <i>CBASP</i> : psycho-educational and CBT for depression and anxiety Delivered via computer Semi-guided	2-hour computer session followed by weekly standardised emails over 8 weeks Eight worksheets based on Situational Analysis - participants to work through these when encounter stressful situation.	Researcher-monitored laboratory	BAI BDI PANAS STAI-S	Completers
Day, McGrath & Wojtowicz (2013) [8]	RCT 2 arms: Intervention (33), WLC (33) N=66; N=66 analysed Three HEIs, Canada	Selective/indicated Undergraduate and postgraduate students 59 females, M age 23.55yrs Mild/moderate symptoms of depression or anxiety or stress (DASS-21)	<i>"Feeling Better"</i> , website-based CBT program Semi-guided	5 core modules, plus 6 optional modules. Completed in own time over 6 week period. Participants received weekly email or telephone non-therapeutic support from a program coach	Own location	DASS-21	ITT

- this was to monitor
and support
completing
intervention.

Ellis et al. (2011) [9]	RCT 3 arms: Intervention (13), CI (13), NTC (13) N=39 One HEI, Australia	Selective/indicated Undergraduate psychology and health sciences students 77% female, M age 19.6 yrs Low-to-moderate levels of psychological distress (K-10)	<i>MoodGym</i> : internet-delivered CBT program Semi-guided	Five modules accessed during three 60-minute sessions over three weeks	Researcher- monitored laboratory	DASS-21 ATQ K10 CBT-Lit OSSS	ITT
Kanekar, Sharma & Atri (2010)* [10]	RCT 2 arms: Intervention, AC N=60; 39 analysed One HEI, USA	Universal Postgraduate students 34 male, M age 24.6yrs Full-time international students of Indian nationality	Internet-delivered intervention: sessions focused on education about social support, hardiness and acculturation Semi-guided	Three sessions completed over eight weeks	Own location	K-10 (analysed as K-6)* ISEL AIRS Hardiness scale	Correlation

Kenardy, McCafferty & Rosa (2003) [11]	RCT 2 arms: Intervention (43), WLC (40) N=83 One HEI, Australia	Selective/indicated Undergraduate psychology students 65 females, M age 19.9yrs Elevated anxiety sensitivity levels (ASI)	<i>Online Anxiety Prevention Program</i> : psycho-educational and CBT-based internet-delivered intervention	Six sessions over six weeks Recommended to spend 5-7 days working on each session	Own location	ASI CES-D BSQ CCQ-M ACQ	Completers
Lintvedt et al. (2013) [12]	RCT 2 arms: Intervention (81), WLC (82) N=163 Two HEIs, Norway	Selective/indicated Undergraduate and postgraduate students 125 females, M age 28.2yrs Elevated levels of psychological distress (K-10)	Self-administered <i>MoodGym</i> : internet-delivered CBT program + <i>BluePages</i> : informational website about depression Unsure about level of human support	Five <i>MoodGym</i> modules made available on sequential weekly basis. Trial period was eight weeks. Participants given manuals detailing which parts of intervention to access weekly.	Own location	CES-D ATQ TDL	ITT (Completers' analysis reported separately)
Orbach, Lindsay & Grey (2007)* [13]	RCT 2 arms: Intervention (47), AC (43) N=90 One HEI, UK	Selective/indicated Undergraduate and postgraduate students 58 female, M age 24.2yrs Not receiving treatment for test anxiety Self-reported text anxiety	Internet delivered intervention for test anxiety; based on CBT Self-administered	Six modules; suggested dosage 30 minutes per week (but not mandatory)	Own location	TAI AHQ EPSI GSES STAI-S	Completers

Radhu et al. (2012) [14]	RCT 2 arms: Intervention (28), WLC (30) N=58; 47 analysed One HEI, Canada	Selective/indicated Undergraduate psychology students 34 female, M age 22.6yrs High levels of perfectionism (PCI)	Internet-delivered CBT for perfectionism (same as Arpin-Cribbie 2012) Self-administered	13 modules over 12 weeks; could access anytime	Own location	CES-D ATQ BAI ASI PSS MPS-F MPS-HF PCI APSR	Completers
Rose et al. (2013) [15]	RCT 2 arms: Intervention (34), AC (32) N=66; 59 analysed One HEI, USA	Selective/indicated Postgraduate students, mostly from Management and Law courses 33 females, M age 27.3yrs Elevated stress (PSS)	<i>SMART-OP</i> : CBT-based stress management and resilience training program. Delivered via computer program 6 sessions over 6 weeks + homework between sessions + reminder emails Semi-guided	Six sessions over six weeks; accessed once a week + homework activities between sessions	Researcher monitored laboratory	PSS SPCS Trier Social Stress Test Biological markers: a-amylase (saliva), heart rate + variability (ECG), skin conductance, systolic and diastolic blood pressure	Completers

Sethi, Campbell & Ellis (2010) [16]	RCT 4 arms: Intervention (9), CI 1 (10), CI 2 (9), NTC (10) N=38 One HEI, Australia	Selective/indicated Undergraduate psychology students 25 females, M age 19.47yrs Low-to-moderate depression and/or anxiety (DASS-21) Universal	<i>MoodGym</i> : internet-delivered CBT program Semi-guided	Five modules accessed during three sessions over three weeks	Researcher-monitored laboratory	DASS-21 K10 ATQ	ITT
Taitz (2011) [17]	RCT 2 arms: Intervention (86), NTC (89) N=175 One HEI, USA	Undergraduate students 150 female, M age 20.7yrs ≥18 yrs, no lucid dreaming experience	Lucid dreaming instruction taught via the internet Self-administered	Website accessed once a week over four week period	Own location	BDI LOC scale Lucid Dream Recall + Control questionnaire Dream recall questionnaire	Uncertain

Abbreviations: RCT – randomised controlled trial; AC – active control; CI – comparison intervention; WLC – wait-list control; NTC – no treatment control; ITT – intention-to-treat analysis; HEI – higher education institution; CBT – cognitive-behaviour therapy. An asterisk (*) indicates the study could not be included in the primary outcome measures meta-analyses, but may have been included in the attrition meta-analyses.

Measures: ACQ - Agoraphobia Cognitions Questionnaire; AHQ – Anxiety Hierarchy Questionnaire; AIRS – American International Relations Scale; APSR - Almost Perfect Scale-Revised; ASI - Anxiety Sensitivity Index; ATQ - Automatic Thoughts Questionnaire; BAI - Beck Anxiety Inventory; BDI - Beck Depression Inventory ; BFNE – Fear of Negative Evaluation scale; BSQ - Body Sensations Questionnaire; CAS - College Adjustment Scales; CBT-Lit - Cognitive Behavioural Therapy Literacy Scale; CCQ-M - Catastrophic Cognitions Questionnaire-Modified ; CES-D - Centre for Epidemiologic Studies–Depressed Mood Scale; CPQ-CC - Communication Patterns Questionnaire - Constructive Communication Subscale; CSI - Couples Satisfaction Index; CTS-2 - Revised Conflict Tactics Scale; DASS-21 - Depression, Anxiety and Stress Scale – 21 item

version; EPSI – Exam Problem-Solving Inventory; FFMQ – Five Facet Mindfulness Questionnaire; FPSQ – Fear of Public Speaking Questionnaire; GSES - General Self-Efficacy Scale —exam related; HPLP-II - Health-Promoting Lifestyle Profile II; ISEL – Interpersonal Support Evaluation list; K-10 - Kessler Psychological Distress Scale; LOC scale - Internal/External Locus of Control Scale; MPS-FM-CM - Multidimensional Perfectionism Scale - Concern over Mistakes subscale ; MPS-HF - Multidimensional Perfectionism Scale; MS – Maladjustment scale; Online Social Support Scale (OSSS); PANAS - Positive and Negative Affect Schedule; PCI - Perfectionism Cognitions; PRQC - Perceived Relationship Quality Components Inventory; PSS - Perceived Stress Scale; SAD – Social Avoidance and Distress Scale; SPCS – Stress and Perception of Control Scale; SSPS – Self-Statements During Public Speaking; STAI-S - State Trait Anxiety Inventory – State; TAI - Test Anxiety Inventory; TDL – Treatment Depression Literacy.

2.3.2 Location and delivery of intervention

The majority were delivered via a website or university intranet (N=13), and four were offline computer programs (3, 4, 7, 15). Five were delivered at a study site, e.g. researcher-monitored computer lab (3, 4, 7, 9, 15, 16), while six internet-based interventions were accessed in participants' own location (2, 6, 10-13). Fourteen trials had interventions with a module/sectional format (1-5, 7-11, 13-16) ranging from three (10) to thirteen modules (1, 14). The other trials coupled module-based (*MoodGym*) and psycho-educational (*BluePages*) websites (12); provided website-based bi-weekly instruction (17), or was a psycho-educational stress management website (6). The intervention delivery period ranged from two (5, 6) to twelve weeks (14), with median length of six weeks. All studies reported short term outcomes (≤ 12 weeks) with measures usually administered at the end of the trial. Five reported additional follow-up at six months (6, 8, 11), ten months (4) and one year post-baseline (2). Four website-based interventions stated a required length of time needed to accessing the intervention: at least four 20 minute periods over two weeks (6); one hour per week over three weeks (9); 30 minutes per week over six weeks (13); and five-to-seven days for each module (11). The four computer-delivered interventions took between 30 to 120 minutes to complete and were supplemented by weekly standardised emails (3, 4, 7, 15).

2.3.4 Use of human support in interventions

Seven trials were classified as self-administered (1, 2, 6, 11, 13, 14, 17), with nine being semi-guided (3- 5, 7-10, 15, 16). For semi-guided interventions, six trials involved sending standardised emails periodically to encourage completion of intervention (5, 10), or as reminders about principles learnt in the computer-based intervention (3, 4, 7, 15). Chiauzzi et al. (6) sent reminder emails only if participants were not accessing the intervention for the required duration. Two trials featured weekly telephone or email-based support from a 'program coach' (8) or the researchers (15) to help intervention completion or to prompt skills practice. Six trials were accessed at a study site where a researcher provided support and aided familiarity to the intervention (3, 4, 7, 9, 15, 16). One intervention involved peer interaction via online forum (10). Three offline computer-delivered interventions involved a single session of participant-computer interaction, supplemented with hard copies of the presented material (3, 4) or worksheets to complete after experiencing a stressful encounter (7). The additional computer-delivered intervention was accessed weekly over six weeks and was supplemented with hard copies and a practice version of the intervention on a USB flash drive for off-site access (15).

2.3.5 Participant characteristics

A total of N=1795 participants consented and were randomised to a trial arm. Sample sizes ranged from 38 (16) to 240 (6). Four trials had samples of ≥ 150 participants (6, 7, 12, 17). Overall N=1480

were explicitly included in analyses. Seven studies explicitly stated analysis was conducted on participants who completed pre-post intervention measures (1, 7, 10, 11, 13-15), whilst eight conducted intention-to-treat (ITT) analyses (2, 4, 5, 6, 8, 9, 12, 16). ITT was conducted through using maximum likelihood estimation (4, 8); mixed-models repeated measures (12); mixed-models analysis (6); and by carrying last observation forward (2, 5). One study reported separate ITT, completers and compliers analyses (12). Twelve publications stated participant dropout/withdrawal data; dropout rates ranged from 7.2% (1) to 44.2% (5). Five provided some reasons for withdrawal, including not receiving response to researcher's contact (4); time constraints (2, 11, 14); personal reasons (14); concerns about intervention efficacy (2); participants felt better after receiving some intervention modules (2); and participant requested face-to-face therapy (12).

The ten studies describing sample's age range included participants ranging from 17 to 51 yrs. In fifteen trials, participants' mean age ranged from 18.37 to 28.2 years; the overall mean from these was 22.6 yrs. Females were the majority in 15 studies, with gender balance varying from 50% (15) to 88.46% (5) of the sample being female. Ten trials were conducted on undergraduates (1, 3, 4, 6, 7, 9, 11, 14, 16, 17), five on under- and postgraduates (2, 5, 8, 12, 13), and two on postgraduates (10, 15). Psychology students were over represented: seven recruited psychology undergraduates only (1, 3, 4, 7, 11, 14, 16) and another recruited psychology and health

sciences students (9). Seven trials used course or financial credit for participation (3, 4, 7, 9, 14-17). Seven trials were conducted in American HEIs (3, 4, 6, 7, 10, 17), with three trials in Canada (1, 8, 14) and Australia (9, 11, 16), two in the UK (5, 13), and one in Spain (2) and Norway (12). Thirteen trials were within one HEI (1, 3-5; 7, 9-11, 13-17); the others recruited students at two (2, 12), three (8) and six HEIs (6).

2.3.6 Multimedia use and interactivity of interventions

Limited information was provided regarding multimedia and interactivity. Text was presented in all interventions, with the use of images/graphics also reported (3; 4; 6; 9-12). Animations, music and audio voiceovers were used in the examination anxiety intervention (13), and the social anxiety intervention utilized online video streaming to expose participants to an anxiety-inducing situation (2). *MoodGym* (9, 12, 16) includes interactive activities and an online workbook. Recently published studies appeared to provide more information about intervention content and presentation. Day et al. (8) reported that each module used videos, audio, pictures and interactive activities. Mindfulness was taught in one intervention through text and videos, and participants could choose to listen to either a male or female delivered ten-minute meditation instruction audio-recording (5). *SMART-OP* incorporated animations, videos, text and game-like interactive tasks (15).

2.3.7 Outcome measures used and questionnaire response burden

A small number of established valid and reliable measures were used to measure depression, anxiety, psychological distress and stress outcomes (see Table 4). All trials administered self-report measures, either through hard copy or online administration. One study administered the Trier Social Stress Test and measured physiological stress responses (15).

Response burden reflects the amount of strain put on participants to complete measures; factors influencing burden include length and intensity of measures and concentration required to complete them (Rolstad, Adler, & Rydén, 2011). This requires consideration within trials as participants typically complete measurement batteries at baseline and post-intervention, and potentially at more time-points. Too many questions may increase burden and result in greater attrition or lower response rates (Rolstad, et al., 2011). We calculated the number of items participants completed through totalling the approximated number of items within administered measures in the included publications. It was estimated the measurement battery ranged from 25 (8) to 225 questions (14). The estimated median number of questions presented to participants was 75 items.

Table 4. Outcome measures used for assessment of depression, anxiety, psychological distress and stress.

Author	Anxiety				Depression				Psychological distress		Stress	
	ASI	BAI	DASS-21	SAD	TAI	BDI	CES-D	DASS-21	K10	PHQ-4	PSS	DASS-21
Arpin-Cribbie 2012	✓	✓					✓				✓	
Botella 2010				✓		✓						
Braithwaite 2007		✓				✓						
Braithwaite 2009		✓				✓						
Cavanagh 2013										✓	✓	
Chiauszi 2008											✓	
Cukrowicz 2007		✓					✓					
Day 2013	✓		✓					✓				✓
Ellis 2011			✓					✓	✓			✓ ^a
Kanekar 2010									✓ ²			
Kenardy 2003	✓						✓					
Lintvedt 2011							✓					
Orbach 2007					✓							
Radhu 2012		✓					✓				✓	
Rose 2013											✓	
Sethi 2010			✓					✓	✓			✓ ^a
Taitz 2011						✓						

¹ Data from stress subscale of DASS-21 was not reported in the published article.

² Shorter version of scale used to analyse data collected on K10.

2.3.8 Participant evaluation and satisfaction with intervention

Eight studies included participant evaluation (5, 6, 8, 9, 11-13, 15). Included interventions were reported to be highly useable (15), satisfactory (6), credible (11) and moderately-to-highly useful and helpful (5, 8, 9, 12, 13). The majority of participants felt the mindfulness intervention had at least some personal benefit (5).

One intervention (8) underwent usability, efficiency and acceptability testing by university students prior to being trialled (Currie, McGrath, & Day, 2010).

2.3.9 Risk of bias in included studies

We felt the risk of bias in included studies to be moderate, mostly due to publications being unclear or providing insufficient details (see Figure 4). Only six described their randomisation method: a random number table (1), a computer-generated randomisation sequence (3, 5, 8, 12) and through tossing a coin (13). Two studies (3, 10) did not explicitly state numbers in each condition. It is viable to blind those collecting and/or assessing outcome data as blinding participants can be difficult due to types of controls (Eysenbach & CONSORT-EHEALTH Group, 2011; Spek , et al., 2007). One study stated single-blindedness of participants and provided post-intervention evaluation of researchers' non-blindedness (6), and another reported single-blindedness of researcher collecting data (1). Seven studies explicitly did completers' analyses: overall 208 participants were not included in analysis (1, 7, 10, 11, 13-15). Outcome data from three studies could not be extracted due to not reporting numbers in each condition (3, 10); insufficient data reporting (3, 6); and assessing outcome data using a shortened version of the measure (10). Gender balance is an issue as the majority of studies had more female than male participants. Baseline symptomology is also a potential source of bias, as it may

	a.	b.	c.	d.	e.	f.	g.	
[I/S] Arpin-Cribbie 2012	+	?	?	+	-	-	?	
[I/S] Chiauuzzi 2008	?	?	+	+	+	-	?	a. Random sequence generation (selection bias)
[I/S] Cukrowicz 2007	?	?	?	?	-	?	?	b. Allocation concealment (selection bias)
[I/S] Day 2013	+	+	+	?	+	+	?	c. Blinding of participants and personnel (performance bias)
[I/S] Ellis 2011	?	?	?	?	+	+	?	d. Blinding of outcome assessment (detection bias)
[I/S] Kenardy 2003	?	?	?	?	-	+	?	e. Incomplete outcome data (attrition bias)
[I/S] Lintvedt 2011	+	?	?	?	+	+	?	f. Selective reporting (reporting bias)
[I/S] Orbach 2007	+	?	?	?	-	?	?	g. Other bias
[I/S] Radhu 2012	?	?	?	?	-	+	?	+
[I/S] Rose 2013	?	?	?	?	-	+	?	?
[I/S] Sethi 2010	?	?	?	?	+	+	?	-
[T] Botella 2010	?	?	?	?	+	+	?	
[U] Braithwaite 2007	?	?	?	?	-	-	?	
[U] Braithwaite 2009	+	?	?	?	+	+	?	
[U] Cavanagh 2013	+	?	?	?	+	+	?	
[U] Kanekar 2010	?	?	?	?	-	-	?	
[U] Taitz 2011	?	?	?	?	+	+	?	

Figure 4. Breakdown of each type of risk of bias in the included studies.

have caused some difficulties comparing intervention effectiveness in improving mental health outcomes; some studies only recruited participants with minimal symptoms, while others wanted those experiencing elevated symptoms.

2.3.10 Distribution of the reported data

Six studies stated data had been checked for normality assumptions (1, 6, 7, 12, 13, 15). Two studies transformed skewed data for analysis to approximate a normal distribution (6, 15) whilst Orbach et al. (13) used non-parametric tests for skewed data. No studies appeared to provide alternative measures of central tendency. Ten

studies reported skewed post-intervention on at least one primary outcome measure of interest (1, 2, 4, 5, 7- 9, 12, 14, 17).

2.4 Meta-analysis for anxiety, depression and psychological distress outcomes

Alongside three studies whose data was not extracted due to insufficient data reporting (3, 6, 10), data from Orbach et al. (13) was excluded as test anxiety is considered an 'extreme' reaction to examinations, and the authors state it is distinct from commonly diagnosable anxiety disorders. Data regarding participant attrition was extracted from two of these studies (6, 13). All mental health outcomes were continuous and scale-based, and were extracted as endpoint average scores with lower scores indicating fewer symptoms. Within the presented analyses negative SMD values support the intervention condition.

Three separate analyses explored intervention vs. inactive control, intervention vs. active control, and intervention vs. comparison intervention. For each type of comparison, outcomes relating to depression, anxiety, psychological distress and stress are separately reported. For each outcome within each comparison, non-skewed data was analysed first, with a secondary sensitivity analysis analysing both skewed and non-skewed data on each outcome. If skewed data was present in one trial arm but not in the other, it was included in sensitivity analysis. Findings within forest plots are sub-

grouped by the separate measures used for each outcome, in addition to a calculated overall pooled effect. On all forest plots, the bracketed letter before author name indicates their type: [U] – universal intervention; [I/S] – indicated or selective intervention; [T] – treatment intervention.

2.4.1 Intervention compared to inactive control

Seven trials used this trial arm comparison to investigate effects of intervention upon anxiety outcomes. All trials were based on CBT and includes four separate trials of two interventions (1, 9, 14, 16). Two trials reported non-skewed data: for these there was no difference between intervention and control for anxiety; $n=93$; 2 RCTs, pooled SMD -0.67, CI -1.59 to -0.25, $Z=1.43$, $P=.15$ ($I^2=66\%$, $P=.09$). Sensitivity analysis incorporated an additional five studies reporting skewed data; this significantly favoured intervention; $n=374$, 7 RCTs, pooled SMD -0.56, CI -0.77 to -0.35, $Z=5.19$, $P<.001$ ($I^2=0\%$, $P=.63$) (see Figure 5). Nine trials in this comparison reported depression outcomes. Eight trials were CBT-based interventions and includes five separate trials of two interventions (1, 9, 12, 14, 16). Three trials reported non-skewed outcome data, and significantly favoured intervention; $n=144$, 3 RCTs, pooled SMD -0.67, CI -1.15 to -0.20, $Z=2.77$, $P=.006$ ($I^2=43\%$, $P=.17$). A separate sensitivity analysis included an additional six studies reporting skewed data, which significantly favoured intervention; $n=712$, 9 RCTs, pooled SMD -0.43, CI -0.63 to -0.22, $Z=4.06$, $P<.001$ ($I^2=39\%$, $P=.11$) (see Figure 6).

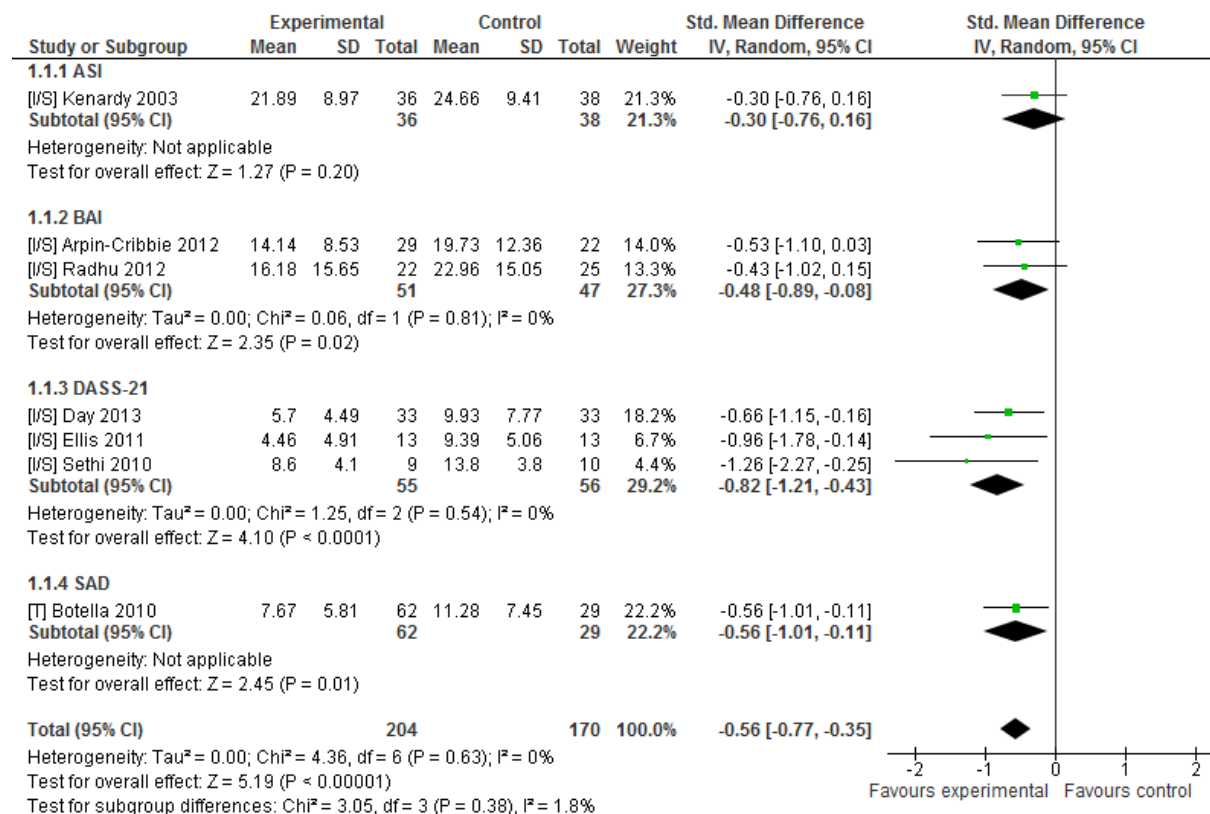


Figure 5. Sensitivity analysis of post-intervention anxiety outcomes for intervention compared to inactive controls.

Two trials measured psychological distress; one reported skewed data (5). Cochrane Collaboration guidelines suggest forest plots should not be produced for outcomes with single studies (Schunemann et al., 2008); findings from the single non-skewed trial are presented in Appendix 5. A sensitivity analysis was performed to include the additional study, which found no difference between intervention and control; n=123, 2 RCTs, SMD-1.39, 95% CI -3.79 to 1.02, Z=1.13, P=.26. Significantly high heterogeneity was present; $I^2 = 92\%$, $P < .001$.

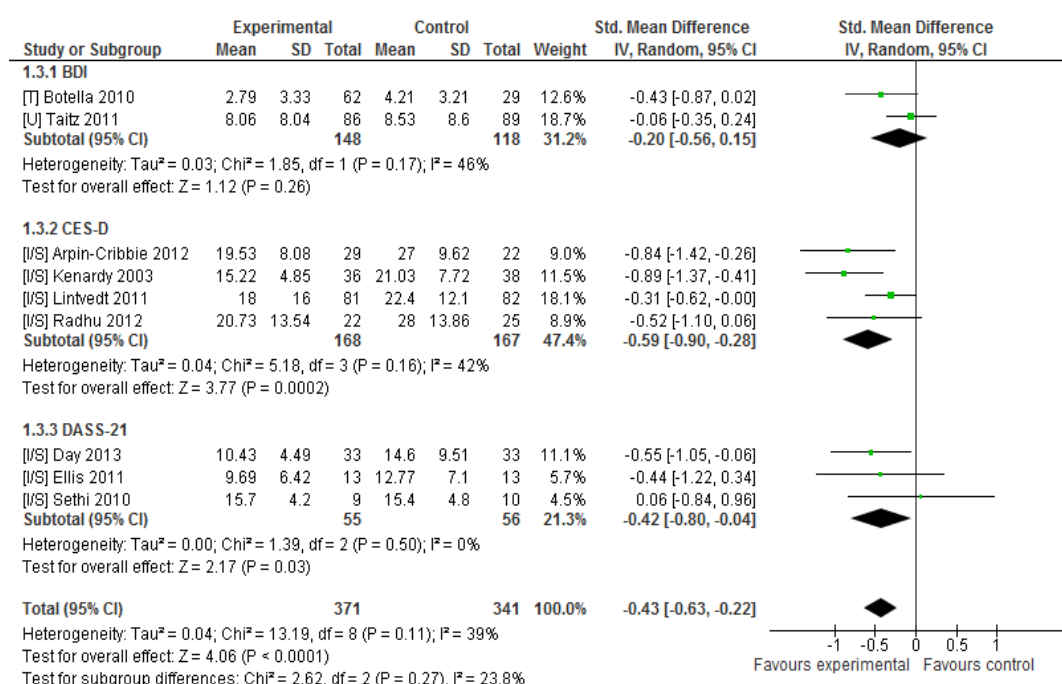


Figure 6. Sensitivity analysis of post-intervention depression outcomes for intervention compared to inactive controls.

Three RCTs included an outcome measure of stress. Two studies reporting non-skewed data significantly favoured intervention; $n=151$, 2 RCTs, pooled SMD -0.44, CI -0.77 to -0.12, $Z=2.68$, $P=.007$ ($I^2=0\%$, $P=.49$). Sensitivity analysis, which included the additional study, significantly favoured intervention; $n=217$, 3 RCTs, pooled SMD -0.73, CI -1.27 to -0.19, $Z=2.64$, $P=.008$. A significant high level of heterogeneity was present; $I^2=72\%$, $P=.03$.

Participants were significantly more likely to leave the study early if they were randomly assigned to intervention condition; $N=999$, 11 RCTs, OR 2.73, CI 1.56 to 4.76, $Z=3.54$, $P<.001$ ($I^2=30\%$, $P=.20$) (Figure 7). One hundred and eighteen (22.7%) left the intervention

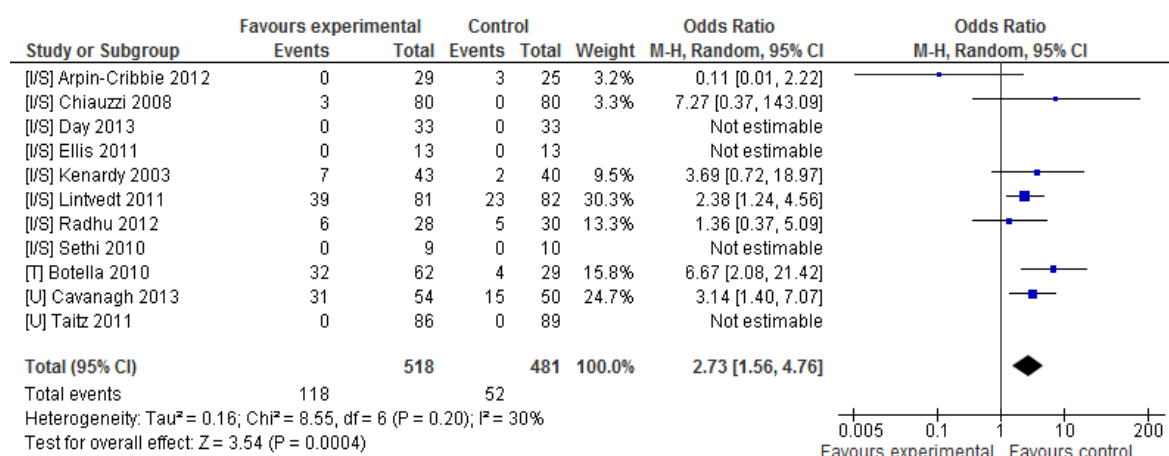


Figure 7. Attrition rates for intervention vs. inactive control conditions.

condition early, compared to 52 (10.8%) in the inactive control condition.

2.4.2 Intervention compared to active control

Seven trials explicitly included an active control, but only three reported their outcome data or could not be included for previously-described reasons. Attrition data was extracted from five trials. Two used the same active control: participants viewed computer-based materials which provided descriptive depression and anxiety information (4, 7). Two trials in this comparison reported anxiety and depression outcomes; both reported skewed data (4, 7). Sensitivity analysis did not favour either intervention or active control for anxiety, $n=229$, 2 RCTs, pooled SMD -0.18, CI -0.98 to 0.62, $Z=0.45$, $P=.66$; the same occurred for depression, $n=229$, 2 RCTs, pooled SMD -0.28, CI -0.75 to 0.20, $Z=1.14$, $P=.25$ ($I^2=67\%$, $P=.08$). A high level of heterogeneity was reported for

anxiety outcomes; $I^2 = 88\%$, $P = <.001$. One trial assessed psychological distress within this comparison, and so was not subject to analysis (15) (Appendix 5). There were no differences in attrition between the two arms; $n=555$, 5 RCTs, OR 0.74, CI 0.39 to 1.40, $Z = 0.93$, $P = .35$ ($I^2 = 0\%$, $P = .51$) (see Figure 8). Twenty-three (8.2%) participants left the intervention condition early, compared to twenty-eight (10.1%) in the active controls.

2.4.3 Intervention compared to a comparison intervention

Five trials compared the intervention to a comparison intervention; comparisons were a website-based stress management intervention (1), a face-to-face version of the intervention (2), another computer-based CBT programme (3), and an online support group (9). Sethi et al. (16) used two comparison interventions consisting of face-to-face CBT and this combined with *MoodGym*. The face-to-face CBT was selected for this analysis to avoid double-counting of the intervention condition's data. Outcome data from one trial could not be extracted (3), resulting in four trials. These four all reported

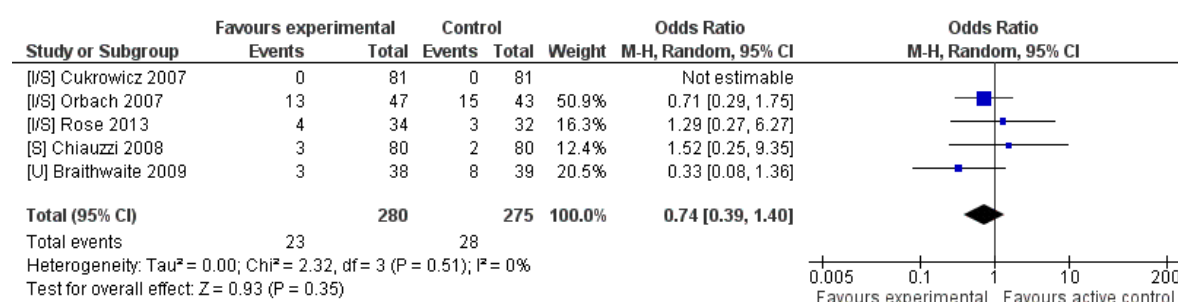


Figure 8. Attrition rates for intervention vs. active control conditions.

depression and anxiety outcomes, and included two trials of *MoodGym* (9, 16). Sensitivity analyses were conducted for both outcomes as only one trial in each outcome reported non-skewed data (Appendix 5). For anxiety, neither intervention or comparison were favoured; $n=198$, 4 RCTs, pooled SMD -0.10, CI -0.39 to 0.18, $Z=0.71$, $P=.48$ ($I^2 = 0\%$, $P=.90$) (Figure 9). This was also evident for depression outcomes: $n=198$, 4 RCTs, pooled SMD 0.33, CI -0.43 to 1.09, $Z=0.85$, $P=.40$ (Figure 10). Significant high heterogeneity was reported for depression, $I^2 = 82\%$, $P<.001$. Only one study reported outcomes relating to psychological distress (Appendix 5). There were no differences in attrition between conditions: $n=194$, 4 RCTs, OR 1.18, CI 0.02 to 60.23, $Z=0.08$, $P=.93$ ($I^2=0\%$, $P=.51$). All attrition came from one study (2),

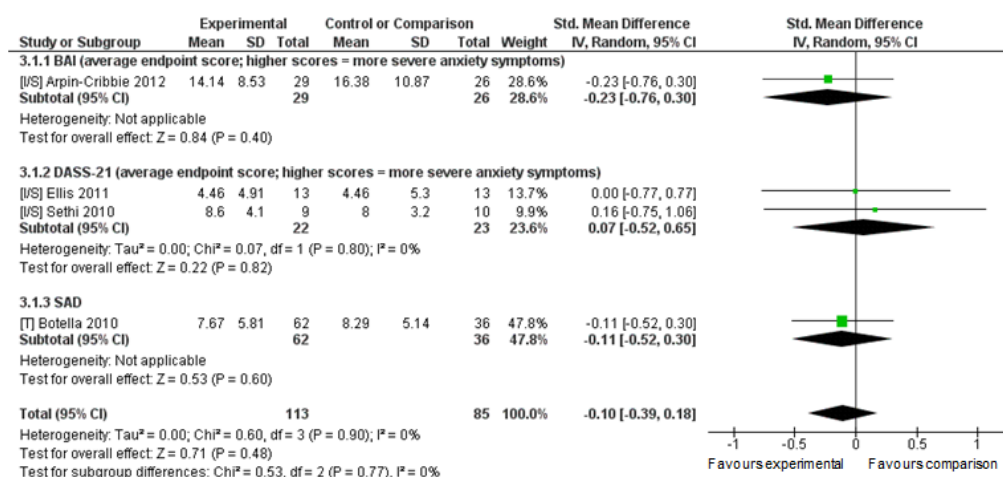


Figure 9. Sensitivity analysis of post-intervention anxiety outcomes for intervention compared to comparison intervention.

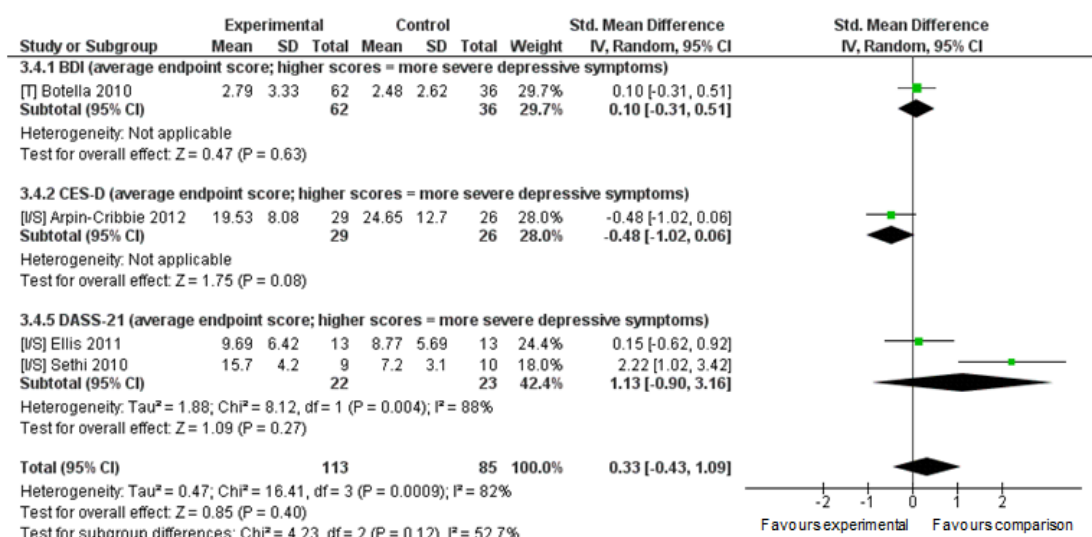


Figure 10. Sensitivity analysis of post-intervention depression outcomes for intervention compared to comparison intervention.

wherein thirty-two participants left the study early. Seven (8.6%) in the comparison intervention condition left the study early.

2.4.4 Additional analyses

Given some of the identified methodological issues, some additional sensitivity meta-analyses were performed. More recent publications appeared to report greater methodological detail, possibly due to the increased establishment of the research field. The CONSORT-eHEALTH statement provides a list of recommendations for reporting RCTs of internet and mobile-based interventions (Eysenbach & CONSORT-EHEALTH Group, 2011; Schulz, Altman, & Moher, 2010). Its publication year was used as a benchmark for comparing 'older' (≤ 2011) to 'newer' (≥ 2012) publications; included studies within the

meta-analysis were divided into these two publication categories and respectively analysed. These analyses could only be performed for anxiety and depression outcomes in the 'intervention vs. inactive control' and 'intervention vs. comparison intervention' comparisons due to low numbers of included trials and no differences in the publication dates in other comparisons/outcomes.

For depression outcomes in intervention vs. inactive control, a larger effect size was found for more recent publications ($n=164$, 3 RCTs, pooled SMD -0.63 , CI -0.94 to -0.31 , $z=3.91$, $P<.0001$; $I^2=0\%$, $P=.70$) than for older publications ($n=548$, 6 RCTs, pooled SMD -0.35 , CI -0.60 to -0.09 , $z=2.64$, $P=.008$; $I^2=47\%$, $P=.09$). For anxiety outcomes in the same comparison, there was little variation in effect sizes and statistical significance in older ($n=210$, 4 RCTs, pooled SMD -0.60 , CI -0.95 to -0.25 , $z=3.37$, $P<.001$; $I^2=25\%$, $P=.26$) and newer publications ($n=164$, 3 RCTs, pooled SMD -0.55 , CI -0.87 to -0.24 , $z=3.46$, $P<.001$; $I^2=0\%$, $P=.84$). For intervention vs. comparison intervention analysis, there was only one post-2012 publication; analysis of all studies in this outcome is reported in the previous section. Looking at ≤ 2011 studies, there was no difference reported between intervention and comparison for depression, $n=143$, 3 RCTs, pooled SMD 0.68 , CI -0.33 to 1.69 , $z=1.31$, $P=.19$ ($I^2=82\%$, $P=.004$); or anxiety, $n=143$, 3 RCTs, pooled SMD -0.05 , CI -0.39 to 0.28 , $z=0.30$, $P=.76$ ($I^2=0\%$, $P=.086$).

Additional sensitivity analyses were conducted for trials which rewarded participation credit. This was not performed for the intervention vs. active control comparison as all studies within this rewarded credit. For those which gave credit in the intervention vs. inactive control comparison, the intervention was supported in improving anxiety outcomes ($n=92$, 3 RCTs, pooled SMD -0.75 , CI -1.23 to -0.28 , $z=3.10$, $P=.002$; $I^2=15\%$, $P=.31$) but not for depression ($n=267$, 4 RCTs, pooled SMD -0.16 , CI -0.41 to 0.08 , $z=1.33$, $P=.18$; $I^2=0\%$, $P=.44$). For studies which did not reward credit, intervention still supported anxiety ($n=282$, 4 RCTs, pooled SMD -0.51 , CI -0.75 to -0.26 , $z=4.07$, $P<.001$; $I^2=0\%$, $P=.75$) and depression ($n=282$, 5 RCTs, pooled SMD -0.55 , CI -0.78 to -0.32 , $z=4.66$, $P<.001$; $I^2=26\%$, $P=.25$)

For participants who received credit in the intervention vs. comparison intervention contrasts, neither condition was supported for anxiety ($n=45$, 2 RCTs, pooled SMD 0.07 , CI -0.52 to 0.65 , $z=0.22$, $P=.82$; $I^2=0\%$, $P=.80$) or depression ($n=45$, 2 RCTs, pooled SMD 1.13 , CI -0.90 to 3.16 , $z=1.09$, $P=.27$; $I^2=88\%$, $P=.004$). The same was found for participants who did not receive credit upon anxiety ($n=153$, 2 RCTs, pooled SMD -0.15 , CI -0.48 to 0.17 , $z=0.93$, $P=.35$; $I^2=0\%$, $P=.73$) and depression outcomes ($n=153$, 2 RCTs, pooled SMD -0.16 , CI -0.73 to 0.40 , $z=0.57$, $P=.57$; $I^2=65\%$, $P=.09$).

2.5 Discussion

2.5.1 Principle findings and considerations

Seventeen studies of 13 website-based trials and four delivered offline computer-delivered programs were retrieved, of which 14 were inputted into meta-analysis. The findings suggest website-based and computer-delivered interventions can produce beneficial mental health outcomes in university students, supporting previous reviews of internet and computerised interventions for depression and anxiety (Andersson & Cuijpers, 2009; Grist & Cavanagh, 2013; Spek, et al., 2007). The review found several recent publications not reviewed previously by Farrer et al. (2013), which demonstrates the field's fast pace of publications.

Findings demonstrated differences upon outcomes depending on the type of analyses performed. For example, when compared to inactive control, both meta-analyses supported intervention for stress outcomes, with a larger effect found for sensitivity (-0.73) than non-skewed analysis (-0.44). Similarly the heterogeneity went from 0% for non-skewed analysis to 70% for sensitivity analysis; this difference could be due to skewed data, which could affect the overall power of interventions.

When comparing the experimental intervention to active control and comparison interventions, there were no significant differences supporting one intervention over another in improving depression or anxiety. This was anticipated as participants were still actively

doing something, compared to an inactive control (Andersson & Cuijpers, 2009). This may suggest some equivalency in their effect upon improving anxiety and depression outcomes. Two of the comparison interventions were face-to-face CBT, which is representative of one treatment that university students would typically receive. Further research comparing interventions to treatment-as-usual conditions would help explore their viability, and whether they have equivalency in comparison to typical treatments received by young people. Larger effect sizes within intervention vs. inactive control comparisons, than intervention vs. active control comparisons, have been reported previously in CCBT reviews (Andersson & Cuijpers, 2009; Grist & Cavanagh, 2013). This may question the minimum level of active control needed to produce positive change.

Moderate to high heterogeneity could be due to types of comparison intervention or differences in baseline symptomology. Grist & Cavanagh (2013) identified type of control condition as a significant moderator explaining heterogeneity within meta-analyses. In CCBT trials, active controls often share some commonalities with the experimental intervention; CCBT can offer some additional small benefits in improving psychological outcomes (Grist & Cavanagh, 2013). While the present review continues to provide strong support for CCBT (Foroushani, et al., 2011; Grist & Cavanagh, 2013; Kaltenthaler, et al., 2008; Spek, et al., 2007), research should explore what other evidence-based psychological and

psychotherapeutic theories can be adapted to this medium (Andersson & Cuijpers, 2009). It is difficult to determine which intervention elements produced the most beneficial effects, and there are many factors to consider (e.g. level of human support, intervention length).

Separating older and newer studies did appear to influence effect sizes for depression outcomes, with a larger effect size found for more recent publications in intervention vs. inactive control comparisons. Research into internet interventions has become more established and more methodologically sound. However, these findings are tenuous given the small numbers of trials within the separate analyses.

The contrasting findings for the received credit vs. no credit comparison does not allow us to precisely conclude that rewarding participants increased intervention efficacy. Those who participated for credit are likely to be different from students who seek help without a reward or incentive for doing so. Future trials should consider the effect of participant incentives and rewards upon outcomes; given that students are typically financially strained, outcomes in trials may differ from their real-world (i.e. non-trial) use of interventions. College students who participated in an incentive-based weight loss intervention reported financial rewards were strong external motivators to lose weight and achieve weekly goals, but also stated the financial incentive did not influence their

motivation to participate (Davy et al., 2013). Course credit may differ from financial incentives, students may place similar personal value upon these rewards. More recent publications appeared to report more aspects of the CONSORT-health statement. Authors should aim to use this statement in reporting their interventions (Eysenbach & CONSORT-EHEALTH Group, 2011), so that the outcome data, design and content of interventions can be viewed clearly.

Dropout was reported in twelve studies; attrition is common in internet intervention trials (Christensen, Griffiths, & Farrer, 2009; Waller & Gilbody, 2009). As found in a review of CCBT (Grist & Cavanagh, 2013), attrition was more likely to occur in intervention groups when compared to inactive control. Grist suggests no attrition differences between intervention and active control conditions shows attrition is common in any active condition and not a consequence of receiving CCBT. Attrition has commonly been used as a proxy measure of participant evaluation and attitudes towards CCBT (Kenardy, et al., 2003; Mitchell & Gordon, 2007). Interventions that do not sufficiently engage or appeal to the user may be more susceptible to drop-out; subsequently positive findings may occur due to withdrawal of unengaged participants (Kenardy, et al., 2003; Orbach, et al., 2007). Seeking participants' reasons for disengaging is important in helping identify factors affecting intervention adherence. Two studies had similar rationales for delivering their interventions over a short time frame, as shorter

interventions are associated with increased engagement and retention (Cavanagh, et al., 2013; Sethi, et al., 2010). Fewer depressive symptoms at baseline have been positively associated with intervention adherence and reduced attrition (Christensen, et al., 2009). This requires consideration as some trials recruited participants with baseline minimal symptomology. Only two trials assessed adherence upon post-intervention outcomes, for which no associations were found (Chiauzzi, et al., 2008; Kenardy, et al., 2003). It can be difficult to assess participants' levels of intervention engagement in these trials, and definitions of participant engagement vary (Eysenbach & CONSORT-EHEALTH Group, 2011).

Aside from Botella et al.'s trial (2010) which aimed to treat diagnosable social phobia, none of the studies explored post-intervention diagnosis of mental disorders, help-seeking intentions or behaviours. These interventions are used as mental health prevention and longitudinal follow-up could explore the interventions' effects upon prevention and help-seeking. Over a third of participants in one trial stated they had changed their behaviour as a result of the intervention; this included seeking out information, trying self-help techniques, and supporting others (Lintvedt, et al., 2013). Follow-up may be difficult given the transient nature of university life; students may change address or leave higher education between post-intervention and follow-up. Likewise timing of trials is important given the fluctuating demands during the academic year. Only three studies reported when post-

intervention measures were administered; two were during examination periods (Braithwaite & Fincham, 2009; Lintvedt, et al., 2013).

We did not analyse any differences between semi-guided and self-administered interventions, and cannot make assumptions about the impact of human interaction upon intervention effectiveness. A previous review found larger effect sizes for self/un-guided interventions than ones involving guidance (Grist & Cavanagh, 2013). Two interventions (Day, et al., 2013; Rose, et al., 2013) had a large amount of human contact to participants, provided through weekly contact with researchers or from 'program coaches'. This kind of support provides reduced training costs compared to healthcare professionals, and as the program coaches were students themselves, participants may have found them relatable. Trials within researcher-monitored settings could have affected participants' engagement with the intervention (Spek , et al., 2007).

Mental health outcomes were assessed using a small number of well-established continuous measures aligned to diagnostic criteria. This made comparisons less complicated, but several measures can increase statistical heterogeneity (Lieb, Völlm, Rücker, Timmer, & Stoffers, 2010). We attempted to counteract this by sub-grouping each type of measure within each outcome, and looking separately at the overall pooled effect. By doing this, we could explore measurement comparisons for each outcome, which did show some variation in the different measures used for the same outcomes.

The overwhelming presence of skewed data in the included studies affected their quality. Only a minority had transformed skewed data or used non-parametric tests. Differences in measures' scoring range may be a reason for heterogeneity. For example, the two psychological distress measures varied on their scoring range: the PHQ-4 is brief with scores ranging from 0-to-12, while scores on the K10 range from 0-to-40. Large heterogeneity has been reported previously in reviews of internet-delivered and computer-based interventions for depression (Andersson & Cuijpers, 2009; Richards & Richardson, 2012). Richards & Richardson (2012) suggest eligibility criteria can contribute to heterogeneity; this is possible given the variation in the baseline symptomology eligibility criteria of included participants, and some analyses included trials that involved participants experiencing baseline elevated symptoms and no symptoms at baseline. This variation may affect the overall power of the included interventions.

Small sample sizes were apparent, and there was limited information about use of power calculations. The forest plots showed smaller samples were associated with larger confidence intervals, and so are less reliable. Coupling this with the considerable skew means findings need to be approached with caution. Completers' analysis may bias the calculated effectiveness of interventions as these analyses are likely to produce larger outcome effects (Donker, Griffiths, Cuijpers, & Christensen, 2009). ITT analysis helps avoid selection bias that can occur when only participants who completed

measures at all study time-points are analysed (Jüni, Altman, & Egger, 2001).

Included interventions may not have reminders when administered in a non-trial context. Three studies trialled *MoodGym*, a freely available online resource that any member of the public can sign up to. General public users do not receive reminders to complete the intervention, unlike in two of the included studies wherein participants completed it in a monitored setting (Ellis, et al., 2011; Sethi, et al., 2010).

Funnel plots were inspected to explore possible publication bias; these did not appear to show any unusual asymmetry. This was approached cautiously as funnel plot asymmetry should ideally be used when ≥ 10 studies are in the analysis (Sterne, Egger, & Moher, 2008). Non-peer reviewed studies and unpublished data was not sought. Not all interventions may have been designed for university students; they were sampled to opportunistically trial out the intervention, and could be different from the target population (Farrer, et al., 2013). The baseline symptomology means it is problematic to determine how much the intervention reduces the developmental risk of ill mental health. Intervention participants in one trial (Braithwaite & Fincham, 2009) reported a mean pre-post intervention decline of <3 points on the BDI; at baseline, participants were already classified as having minimal depressive symptoms. It is difficult to address the significance of this small decrease in already minimal symptomology. Along with limited

follow-up and not measuring other important outcomes, this makes it difficult to know if interventions maintained outcome improvements or reduced the risk of developing a mental disorder.

Eight samples were recruited from psychology courses; they may be more knowledgeable about mental health and the trial process, and thus more receptive to interventions. However the effects may be greater in students who were not aware of the possibilities of evidenced-based approaches to improve mood. The over-representation of psychology students may account for the gender imbalance in recruitment (Willyard, 2011). Young males are less likely to seek out help for their mental health, and internet-based interventions could particularly reach out to men (Ellis et al., 2013; Ridge, Emslie, & White, 2011). For future trials, researchers need to recruit more males and students in other disciplines. Participants' age range also requires consideration, as unlike Farrer et al. (2013), we did not have age as inclusion criteria. The average age calculated from fifteen included studies was 22.6 years, and some samples included older adults outside the traditional 18-25 years age bracket of students. Older students may have different mental health needs than typically-aged students. Future research would benefit in considering age as a moderating factor of intervention effectiveness within this population.

A moderate risk of bias was calculated mostly due to insufficient reporting, meaning we were unclear in assessing several risk of bias

factors. Insufficient reporting of randomisation methods has been reported in reviews of CCBT, technology-based interventions, and interventions to improve help-seeking, stigmatising attitudes and beliefs in university students (Farrer, et al., 2013; Grist & Cavanagh, 2013; Gulliver, Griffiths, Christensen, & Brewer, 2012; Yamaguchi, et al., 2013). Grading the blindness of participants may be irrelevant given the types of intervention and trial design (Andersson & Cuijpers, 2009). Researchers are becoming more aware of using CONSORT-eHEALTH guidelines (2011) in their publications, which addresses several of these methodological factors essential in reporting and judging trial quality.

In four studies, intervention participants showed more reliable and clinically significant improvement compared to controls (Arpin-Cribbie, et al., 2012; Botella, et al., 2010; Day, et al., 2013; Orbach, et al., 2007). This provides additional value about participants' recovery status. It would also be useful to explore whether outcome improvements correspond to participants' symptom perceptions, as there has been disagreement between measurement-reported symptoms and participants' verbal description of symptom severity (Malpass, Shaw, Kessler, & Sharp, 2010). This could be through a qualitative approach: asking them whether they felt the intervention helped their mental well-being, and might help address apparent over-reliance on psychometric measures.

2.5.2 Studies published after completed review

Since this review was completed, seven relevant RCT studies have been published. Levin, Pistorello, Seeley & Hayes (2013) developed and trialled a two-session web-based intervention ('*ACT on College Life*'; ACT-CL) based on Acceptance and Commitment Therapy (ACT), which was supplemented by automated tailored emails reminding participants to complete the between-session activities. The intervention aimed to improve participants' psychological flexibility, in order to prevent development of mental health problems. The intervention was a *universal* preventative intervention and was trialled with a cohort of American students (N=76). Compared to a wait-list control, at three weeks post-intervention experimental participants (who had minimal symptoms of depression, anxiety or depression at baseline) reported greater reductions in anxiety and depressive symptoms.

Similar to Arpin-Cribbie et al. (2012) and Radhu et al. (2012), Musiat et al. (2014) developed and trialled an intervention which targeted at-risk personality factors for developing common mental health problems. Based on the 'Five Areas' CBT approach, '*Personality and Living of University Students*' ("PLUS") involved five modules designed to help students identify and learn about their personality traits and how they may affect their life, explore strengths and weaknesses, and how to cope with the challenges associated with studenthood. The intervention was trialled on a

British cohort (N=1047). Although the study was *universal* as current symptomology was not eligibility criteria, the authors used modelling techniques to identify two distinct groups showing “low” and “high” risk for developing a mental disorder. Post-intervention findings found interactions between time, condition and risk status. Compared to active control, students who were at “high” risk reported greater reductions of depression and anxiety symptomology.

Hintz, Frazier & Meredith (2015) developed an online stress management intervention (“Present Control Intervention”, PCI) based on the temporal model of control. Through applying Bandura’s self-efficacy principles, the authors aimed to improve students coping self-efficacy: that one has the ability to cope with stressful events, and can control their reactions to events. The intervention aimed to improve their perceived present control, and underwent two pilot studies prior to the trial (these are reported in the publication). PCI consists of four modules relating to stress and perceived present control: each module consists of a video of an expert providing relevant education, a narrated presentation, and an exercise to apply the skills learnt. The intervention was trialled in N=292 psychology students in one American HEI, and was an *indicative/selective* study as participants were eligible if they screened for low perceived control. The intervention was trialled in three arms, comparing the intervention only to an intervention plus tailored feedback group, and an active control condition. At post-

intervention, both intervention groups reported greater present control compared to active control, with no between-group differences found; these findings were maintained at three-week follow-up. The PCI-only group reported significantly less stress, anxiety and depression than the active control, with the PCI plus feedback group also reporting improvements in depression and stress only. Frazier has since repeated this study on a second sample of American psychology students (Frazier et al., 2014), which again found the intervention improved participants' perceived control scores, stress, anxiety and depressive symptomology.

In an American cohort of students presenting at a behavioural medicine clinic (N=43), Santucci, McHugh, Elkins et al. (2014) performed a trial of 'Beating the Blues' (BtB), an online CBT-based intervention consisting of eight modules. This was a *selective/indicative* trial, as participants were eligible if they were experiencing elevated anxiety and/or depressive symptoms. In this two-arm RCT, both groups received BtB but one also received weekly email reminders to complete the intervention. Both groups reported significant pre-post improvements in depression, anxiety and functional impairment. This trial's design meant it would not meet this review's inclusion criteria, but it is being noted here as there have been several trials of BtB (Kaltenthaler, et al., 2008), but none in university student populations.

Taylor-Rodgers & Batterham (2014) developed three separate psycho-educational websites designed to improve mental health literacy, stigma, help-seeking attitudes and intentions relating to anxiety, depression and suicide. Depressive and anxiety symptomology were secondary measures, and the authors note that they expected the intervention to improve help-seeking but not symptomology. Australian students at one HEI (N=67) were randomised to either the psycho-educational intervention or an active control (website consisting of general health and well-being information), and given access over a three-week period. Findings showed both groups reported pre-post improvements in anxiety literacy, with the psycho-education group reporting greater improvements, but there were no significant changes in depression or suicide literacy. The psycho-educational group also reported greater decreases in depression-related stigma, and greater increases in help-seeking intentions from a GP. There were no intervention effects upon symptomology.

Mullin, Dear, Karin et al. (2015) developed the online "Uni-Wellbeing Course" especially for university students experiencing symptoms of stress, anxiety and depression. This intervention is CBT-based, presented didactically (i.e. text-based content) and teaches students psycho-education and skills to help them manage and understand their symptoms. A two-arm RCT, comparing the intervention to WLC, recruited N=55 Australian students at one HEI who self-identified as having anxiety and/or depressive symptoms (i.e.

selective/indicative). The trial was performed in four phases, which varied in the number of intervention modules provided and their dosage over a five/six week period. Participants received weekly automated reminder emails, and a psychologist (and current doctoral student) provided weekly contact to participants; this contact was five-to-ten minutes per week via telephone or email, and was to reinforce participants' progress, intervention completion, and encourage skills practice. Six weeks post-baseline, intervention participants reported significant improvements in depressive and anxiety symptomology, which were maintained at three-month follow-up. However, there were no differences between the two groups.

2.5.2.1 *Studies in progress*

Two protocols for relevant trials have also been published, both of which are CBT-based interventions. Richards et al. (2014) have designed a multimedia interactive six-module web-based intervention ("*Calming Anxiety*") for generalised anxiety disorder (GAD). The intervention, which involves weekly support providing participants with feedback, will be trialled on Irish university students and be compared to wait-list control. Rozental et al. (2014) have developed an eight-module web-based intervention which aims to treat chronic procrastination, as a risk factor for mental health difficulties. Students, recruited from one university-based health centre serving five Swedish HEIs, will be asked to complete two modules in four three-hour sessions at the health centre. Along with

procrastination outcomes, measures of depressive and anxiety symptomology will be administered. This intervention will be compared to a face-to-face therapist-led group version of the intervention.

2.5.3 Implications for practice

As the intervention vs. comparison intervention analyses suggested some equivalency in outcomes, professionals working in student health may be considering online and technology-based resources they can use to support their students. Some universities do appear interested as several British HEIs have incorporated website-based interventions into their welfare services, such as the *CALM/Relief* series (Ultrasix, 2008). None of the included trials assessed whether interventions affected students' academic performance, which is likely to be an important outcome for policymakers. The best improvements in mental health outcomes may be achieved through combining self-help with face-to-face support (Rickwood & Bradford, 2012). Online resources could be used to help meet service demand and be used as a 'support tool' by students whilst waiting to see a relevant professional (Davis-McCabe, 2009). Similarly these resources could be used adjunct in-between counselling appointments.

2.5.4 Implications for research

Future research needs to consider sample composition and size, and address skewed data through either transformation or using alternative tests. Measurements of mental health literacy, help-

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seeking intentions and behaviour would be useful as online interventions are often promoted as an alternative to seeking face-to-face help (Gulliver, Griffiths, Christensen, & Brewer, 2012). Researchers would benefit from collaborating with the student population to understand what measurable outcomes are important to them; understandably academic performance would probably be an important outcome. Gaining user evaluation through qualitative methods would be useful in attaining feedback to address the intervention's worth and usability, and to make them more appropriate for student needs (Mitchell & Gordon, 2007).

2.5.5 Limitations

The use of one coder may have unintentionally biased findings, and it is possible that relevant publications may have been missed in the search. However the search was conducted on several databases and updated through a repeat search. For meta-analysis we could not extract data from three included trials, meaning the pool of data from included interventions was smaller. For the anxiety meta-analyses, measures which may reflect distinct aspects of anxiety disorders (e.g. anxiety sensitivity, social anxiety) were incorporated into one analysis, which may have induced bias. The studies trialling the same three interventions had slight variation in their trials. Lintvedt et al. (2013) coupled *MoodGym* with an information-only website, meaning participants received additional information not delivered in the other two *MoodGym* trials. The type of intervention

may have influenced the reported heterogeneity; Spek et al. (2007) found higher heterogeneity in CCBT treatment interventions compared to ones focused on prevention. In the present review, there was variation in the type of universal and selective/indicated interventions. The level of human support and contact may have impacted upon calculated effect sizes (Spek, et al., 2007).

Trials of mobile apps were not included in this review, as it was felt these were still an emerging technology. University students may use health-related apps as they hold many of the same benefits as computer-based/website-delivered interventions, but could be more accessible given students' ownership of smartphones and tablets. A recent review of mental health apps for smartphones/tablets found only five apps which had been trialled (Donker et al., 2013), of which one was in a student population (Grassi, Gaggioli, & Riva, 2011). However this trial's methodology and data were not reported clearly.

Several studies conducted completers' analyses, which may produce larger outcome effects (Donker, et al., 2009). All interventions used different content and multimedia, which could affect participant interaction and their subsequent effectiveness (Gulliver, Griffiths, Christensen, & Brewer, 2012). Furthermore, using active controls may result in difficulty in understanding the true effect of the experimental intervention upon outcomes (Donker, et al., 2009).

Interventions from different theoretical approaches were combined for the meta-analysis. Limited numbers of non-CBT trials meant

separate analyses exploring different approaches could not be conducted. This could potentially skew findings: future reviews may want to separately analyse outcomes based on the intervention's theoretical underpinning. Use of RAM may induce bias as it places larger significance on smaller studies (Sterne et al., 2011), and there were many small samples within this review. Finally no treatment control and wait-list controls were collapsed into one 'inactive control' category for analysis. Those assigned to wait-list control would have been expecting to receive intervention at some point, and may show improvements in their symptomology due to expectation effects.

2.5.6 Implications for aims of thesis

In this review, there is evidence from three trials supporting the use of *MoodGym* in improving depression and anxiety outcomes. One aim of the developed online resource is to signpost and promote students to available online self-help resources which could aid their management of depression. The evidence from this review and other reviews and RCTs supporting *MoodGym* suggests this would be an evidence-based resource which may benefit from being promoted to students, as it can be accessed privately and may be in line with their needs for self-management and reliance. This review also provides a good understanding of how web-based interventions are conducted in student populations and the recruitment and

analysis difficulties that might occur, and so could help to inform the protocol of an RCT for the developed online resource.

2.6 Conclusions

Overall this review suggests online and computer-delivered interventions can potentially be beneficial in improving depression, anxiety and psychological distress outcomes in university students. These interventions are not a panacea for all, but do provide an easily-implemented health promotion and prevention strategy that can be easily reached by university students. The benefits of these interventions may potentially help HEIs in promoting good mental health and well-being to its population and support students' academic performance (Regehr, Glancy, & Pitts, 2013). However no trials in this review assessed this outcome before or after receiving intervention. The findings support the effectiveness of the adaptation of CBT into self-guided internet-delivered interventions. However, several methodological shortcomings mean findings need to be treated with caution. There needs to be more investigation into the factors influencing intervention effectiveness. Further participant feedback is encouraged to evaluate online and computer-based interventions, and to help further tailor interventions to university student populations.

Chapter Three: Study Two - A survey investigating the profile of mental health symptomology and related help-seeking behaviour in undergraduate university students

3.1 Introduction

As outlined in Chapter One, there is a wealth of literature exploring the prevalence of common mental health difficulties in university student populations, as well as their help-seeking preferences for their mental health-related problems. The changing demographic within higher education means that there are many 'non-traditional' students entering university, and these students in particular may also face additional factors that increase their vulnerability to ill mental health (e.g. limited economic resources) (Royal College of Psychiatrists, 2011; Turner, et al., 2007). In two studies, students from lower socioeconomic backgrounds were more likely to screen for depression and anxiety (Eisenberg, Gollust, et al., 2007; Ibrahim, Kelly, Adams, et al., 2013).

In addition to the significant prevalence of depression and anxiety in university students, bipolar disorder is another potential mental health problem of concern in this population. Bipolar disorder is not an uncommon affective disorder found in university student populations, with studies finding between 1.7% - 25.1% of student samples having a positive screen for probable bipolar disorder (Bae et al., 2014; Chandler, Wang, Ketter, & Goodwin, 2008; Udachina & Mansell, 2007). One study with University of Nottingham students

found 11% (N=87) of the sample had a positive screen (Rawlings, 2012). The developmental onset for bipolar disorder peaks during the late adolescence/early adulthood developmental period, and higher levels of intellectual ability have been associated with increased risk of bipolar disorder (Royal College of Psychiatrists, 2011). In a historical cohort study, MacCabe et al. (2010) used data from the national Swedish register to investigate relationships between educational attainment at 16 years old and hospitalisation for bipolar disorder. In this study, it was found that those in both the lowest and highest ends of school grade distribution has a significantly higher risk for bipolar disorder, but those in the highest grade category (grades ≥ 2 SD above the mean) were most at risk, being nearly four times as likely to develop bipolar disorder, compared to those with average grade scores. Using the same sample and data, the authors also found that higher levels of school attainment were associated with decreased risk of schizophrenia (MacCabe et al., 2008). As typical students fall within the age range of peak onset, and are showing intellectual capacity through undertaking a degree, they may be at above-average risk of bipolar disorder or sub-threshold hypomania as a precursor to it. Hypomania and mania are central characteristic features of bipolar disorder, and subclinical/mild hypomanic traits have been associated with higher levels of creativity (Furnham, Batey, Anand, & Manfield, 2008), and achieving higher grades in humanities-based subjects was more strongly associated with developing bipolar disorder in the Swedish cohort study (MacCabe, et al., 2010). Given this, it is

possible that students studying creative degrees (e.g. those in the Arts) may be more likely to screen for hypomania/mania symptoms.

University students are generally hesitant about seeking out professional help for their mental health for many reasons, which include preferences for self-help and fears relating to stigma (Eisenberg, Golberstein, et al., 2007; Gulliver, et al., 2010). Additionally students' perception of symptoms within the university environment, where they are surrounded by similar peers, may also influence their ability to recognise and appraise symptoms. In an American student sample, beliefs about the normality of stress in university life and uncertainty about the seriousness of the mental health problems were barriers to help-seeking (Downs & Eisenberg, 2012). Furthermore, many symptoms and signs of common mental health problems, such as sleeping and concentration difficulties, are also common and normal aspects of university life (Miller, Johnson, Kwapil, & Carver, 2011), which may further complicate whether or not help should be sought.

There is limited evidence about the symptom profile of mental health difficulties in students. Studies have often focused upon reporting how many students meet threshold screening scores. Depression and anxiety consist of several key symptoms that vary in their frequency and intensity, and there is limited information about which symptoms may be more prevalent in students. Low mood and hopelessness were the most frequent depressive symptoms in

Omani students, with concentration difficulties and sleep disturbances also common (Al-Busaidi et al., 2011). Profiling symptoms can help determine the sub-threshold difficulties prevalent in this population, and be useful in identifying prevalent symptoms which could be targeted in developed interventions.

Individuals' intentions to seek help may vary by their current level of mental distress. Two Australian student studies found that elevated symptoms of depression and psychological distress were associated with reduced help-seeking intentions, when compared to those with minimal symptoms (Ryan, et al., 2010; Wilson, Rickwood, & Deane, 2007). This inverse relationship between depressive symptomology and help-seeking intention relates to the help negation effect, as described in Chapter One. Exploring students' help seeking behaviours can aid identification of where help is sought, and allow us to consider the implications of available help sources (e.g. provision), or whether students need guidance in seeking professional help for clinically-significant mental health problems.

3.2 Aims

The aims of this study were:

- to explore students' help-seeking behaviours for mental health difficulties;

- to investigate the most prevalent symptoms in students with self-rated elevated levels of probable anxiety, depressive or hypomanic/manic symptomology, in the prior two weeks;
- to explore the impact of elevated symptomology upon students' daily functioning;
- to explore relationships between demographic and socioeconomic factors, mental health and help-seeking behaviours.

3.3 Methodology

3.3.1 Design

A cross-sectional survey was administered through the *Bristol Online Surveys* (BOS) web-based instrument. The lead researcher (EBD) had a password-protected account to create and administer the survey, and to manage its data. Online administration was chosen for its ease of circulation, privacy of participation, and the sensitivity of the topic (Walker, 2013), and was appropriate as all students are provided with an email address. To help maximise response, the choice of measures and presentation was kept concise and brief, as survey presentation can affect participants' engagement (Stern, Dillman, & Smyth, 2007).

3.3.2 Sample size calculation

Using an estimated depression prevalence rate of 30%, at a 5% expected accuracy level and 95% confidence level; a minimum sample size of 323 was estimated using a WHO sample size calculation (Lwanga & Lemeshow, 1991). The calculation was conducted using an estimated rate taken from a systematic review of 24 student-only depression prevalence studies (Ibrahim, Kelly, Adams, et al., 2013), as there has not been a review of anxiety or hypomania/mania prevalence in university student populations.

The systematic review calculated a weighted mean depression prevalence rate of 30.6% in university students (Ibrahim, Kelly, Adams, et al., 2013). (Ibrahim, Kelly, Adams, et al., 2013) The study was not looking to recruit a specific number of participants with depression to the present study, but the calculation means that with this minimum sample size, there is 95% certainty that the true prevalence falls 5% at either side of this study's observed prevalence. Meeting this minimal sample size allows us to gain a true representation of the sample's responses.

3.3.3 Sampling and recruitment

Participants were eligible if they were a registered undergraduate aged ≥ 18 years at two local universities. Stratified random sampling was used to select academic schools/departments that delivered undergraduate degrees (39 at UoN, nine at NTU). Each school was assigned a number and a random number generator (www.random.org) randomly selected two-to-four schools in each

faculty/college to be invited to the study. Twenty schools were initially randomly selected. The Head of School (HoS) (or other relevant contact) was contacted via email and provided with study information, and asked for permission to invite their undergraduate students to participate. Six schools did not respond, one declined, and one suggested not inviting their students due to their small undergraduate population; another school was randomly selected in their place. Thirteen schools provided permission to circulate an email-based study advertisement (Appendix 6) to their undergraduate students. The advertisement invited students to an online survey exploring the emotional health and well-being of undergraduate students. The advertisements included an incentive (prize draw to win one Amazon e-vouchers, worth £15) upon study completion. The thirteen schools were categorised into four separate faculties for analysis: Arts & Humanities, Social Sciences, Medicine & Health Sciences; and Science & Engineering.

3.3.4 Measures

3.3.4.1 *Demographics and socioeconomic measures*

Data regarding participants' age, gender, country of origin, and current year, faculty, mode (full-time, part-time) and university of study were collected. Two indices of socioeconomic status were used: parental level of education and parental occupational status. Six levels of parental education were presented, which were collapsed into two categories for analysis; *no higher education* and

completed higher education (Ibrahim, Kelly, Adams, et al., 2013). Eight classifications of occupation were presented, alongside options for unemployed/retired. A free-text box to input occupation title was also presented if participants were unsure; EBD used the Standard Occupational Classification (Office for National Statistics, 2010) to best classify the occupation into one of the eight categories (Ibrahim, Kelly, Challenor, & Glazebrook, 2010). These were collapsed into three categories: *not working/unemployed*, *low/intermediate occupations*, and *managerial/professional occupations* (Ibrahim, Kelly, & Glazebrook, 2013). For analysis and odds ratio calculations, *never worked/unemployed* and *low/intermediate occupation* were collapsed to increase power due to low numbers within the first occupational category. These two categories are similar in that a low level of income would be expected in both groups. This resulted in two categories within the parents' occupation variable: *never worked/unemployed & low/intermediate occupation*, and *managerial/professional occupation*.

3.3.4.2 Mental health

The following three measures were presented online in the same format as their paper versions.

i. Anxiety

The Generalised Anxiety Disorder scale, 7-item version (GAD-7) (Spitzer, Kroenke, Williams, & Lowe, 2006) is a valid and reliable

self-report measure used to screen for probable general anxiety disorders. The seven items reflect aspects of generalised anxiety disorder, and measures symptom occurrence within the previous two weeks. Each item is scored on a 0-to-3 scale: '0' meaning the symptom has not occurred during the previous two weeks; '1' meaning occurrence on "several days"; '2' for "more than half the days"; and '3' for "nearly every day". Scores range from 0-to-21; scores ≤ 4 suggest no anxiety, 5-9 indicates mild probable anxiety, 10-14 moderate probable anxiety, and ≥ 15 indicates severe probable anxiety (Spitzer, et al., 2006). High sensitivity of 0.89 and specificity of 0.82 was reported for cut-off of ≥ 10 (Spitzer, et al., 2006). The GAD-7 has had some use in student populations (Samaranayake & Fernando, 2011) with internal reliability and consistency calculated $\alpha = 0.95$ in one student sample (Rudd, Goulding, & Bryan, 2011), and has been administered via online surveying (Rudd, et al., 2011).

ii. Depressive symptoms

The Patient Health Questionnaire, 9-item version (PHQ-9) (Kroenke, Spitzer, & Williams, 2001) is a self-report instrument used to screen for probable depression. The nine items reflect aspects of depressive symptomology, and measures occurrence during the previous two weeks. Each item is scored on a 0-to-3 Likert scale, which each number representing the same frequency as the GAD-7. Scores range from 0-to-27: scores ≤ 4 imply no depression, 5-9 indicates

mild probable depression, 10-14 indicates moderate probable depression, 15-19 indicates moderate-to-severe probable depression, and scores ≥ 20 suggest severe probable depression (Kroenke, et al., 2001). The developers reported sensitivity of 0.88 and specificity of 0.88 in detecting major depression (Kroenke, et al., 2001). This measure is commonly used in British primary care (Malpass, et al., 2010), and has seen increased use in community-based research, including in student populations (Al-Busaidi, et al., 2011; Eisenberg, Gollust, et al., 2007; Garlow, et al., 2008; Ibrahim, et al., 2010; Schwenk, Davis, & Wimsatt, 2010; Zivin, et al., 2009). It has been administered via the internet to students (Eisenberg, Gollust, et al., 2007; Schwenk, et al., 2010), but there does not appear to be any information regarding its sensitivity and specificity when administered online.

iii. Manic and hypomanic symptoms

The Mood Disorder Questionnaire (MDQ) (Hirschfield et al., 2000) is a self-report screening instrument for the identification of probable bipolar spectrum disorder (BSD) through screening for overall lifetime presence of manic and/or hypomanic symptoms. The first section of the MDQ lists 13 items describing symptoms/experiences relating to hypomania or mania; these are dichotomous with "Yes" and "No" answers. These symptoms and experiences align to DSM-IV diagnostic criteria (Rawlings, 2012). The second section consists of two optional questions which ask: 1) using a dichotomous scale, whether symptoms/experiences occurred in the same time period;

and 2) using a four-point scale from “no problem” to “serious problem”, how problematic these symptoms/experiences were for the individual. MDQ scores are tallied from the first 13 items only, and ranges from 0-to-13. If ≥ 7 of these thirteen items are endorsed, alongside endorsing symptom occurrence within the same time period, and that they caused a moderate-to-serious problem, then it suggests probable BSD (Chandler, et al., 2008).

The original authors reported that the MDQ demonstrated good sensitivity (0.73) and specificity (0.90) for detecting a hypomanic episode (Hirschfield, et al., 2000), but there have been concerns about the MDQ’s specificity and sensitivity, as it may be more sensitive in psychiatric populations than general population samples (Chandler, et al., 2008). There have been attempts to alter the MDQ to improve its sensitivity in non-clinical samples; for example, raising the screening threshold did not show any improvements in specificity (0.11) or sensitivity (0.93) in one student sample (Miller, et al., 2011)

Despite these drawbacks in the specificity and sensitivity of this measure, it was used for the present study as there is still no definitive community-based measure for detecting a range of BSD symptoms (Rawlings, 2012). Furthermore, the MDQ has been previously administered to student populations, including being administered via online surveying (Chandler, et al., 2008; Miller, et al., 2011; Rawlings, 2012; Udachina & Mansell, 2007).

3.3.4.3 Self-reported difficulties and help-seeking behaviour

Two measures were developed by EBD and her supervisors to explore participants' experiences of self-reported emotional difficulties and their help-seeking for them. Participants were asked if they had experienced any difficulties in their emotional wellbeing since entering higher education. Difficulties were described as (but not limited to) *'anxiety and worry, low mood or mood swings, loss of interest/pleasure in usual activities, stress, long-lasting feelings of unhappiness or sadness, and constant feelings of being under pressure'*. If they answered "Yes", they were asked whether these difficulties had impacted upon their life and what these aspects were. Eight possible answers were displayed as a checklist as *'affected my: academic work'; 'employment or job opportunities'; 'social life'; 'relationships with others, including family and friends'; 'physical health'; 'my behaviour'; 'sleep'; and 'eating habits'*. This was presented as a quantitative, unchangeable checklist for which participants could select multiple options. Participants could also select a box stating they did not wish to answer or had no answer. A free-text box allowed participants to qualitatively add any additional impacts.

Finally participants were asked whether they had sought any help for their emotional well-being, and were presented with a checklist of twelve help sources: *'my local health/medical centre – doctor, nurse or other healthcare professional'; 'university counselling*

services'; 'university study support service'; 'university's mental health support worker/advisor/co-ordinator (or equivalent)'; 'Students' Union'; 'university's student services centre'; 'my tutor, supervisor, or lecturer'; 'friends'; 'family'; 'chaplaincy service'; 'used the internet to find more information'; and 'self-help materials' Participants could also tick a box confirming that they would 'prefer not to answer' and an option to state if they had sought no help. This was presented as a quantitative, unchangeable checklist, and participants could select multiple options. A free text box also allowed participants to qualitatively add additional resources. If participants provided a qualitative answer to either of these questions, they were coded into the corresponding categories or into a new one.

3.3.5 Ethical considerations

Ethical approval was obtained from the University of Nottingham Medical School ethics committee (ref: F12012012, Appendix 7). Given the sensitive topic, the committee required use of "emotional health", "emotional well-being" and "emotional difficulties", instead of "mental health"/"mental health difficulties". A list of available services/resources was provided in post-survey debriefing and on the webpage showing the PHQ-9. The study was not administered in the two weeks prior to or during exam periods. No personally identifiable information was collected, and data was kept on an encrypted password-protected database only accessible to the

research team. Participants' email addresses were collected in a separate online survey if they opted into entering the post-study prize draw (opportunity to win a £15 Amazon e-voucher).

3.3.6 Piloting

To explore its usability and comprehensiveness, the online survey was piloted with nine PhD students. Based on their feedback, some minor adjustments were made; this included amending typographical errors, clarifying presentation, and adding a "*prefer not to answer/no answer*" option to all demographic questions.

3.3.7 Procedure

All aspects of this study were conducted via the internet. Circulation of the study invitation was conducted in two phases. The reasoning for this was that new first year students would naturally be expected to experience a lot of psychological changes in their initial move to university. It was anticipated that their scores on the administered measures might be more elevated during this major transition period. The two phases were:

1. In mid-October 2012, 2nd, 3rd, 4th and 5th Year undergraduate students were sent a study invitation email. A reminder email was sent to these students two weeks after first circulation.
2. In mid-November 2012 1st Year undergraduate students received the same study invitation email and the same reminder email two weeks later.

Invitation emails were sent through schools' administrative contacts. Attached to the email were a digitised information sheet and the online survey's URL (Appendix 8). The online survey's URL was only advertised via email and was not password protected. The survey consisted of eleven webpages, with the majority of questions/items being mandatory and all items completed in the same order (Appendices 9-10). Participants were informed their IP address would be automatically logged, but they would not be personally identifiable from this. After providing consent and creating an identification code, participants answered demographic and socioeconomic questions. The GAD-7, PHQ-9 and MDQ were subsequently presented on separate webpages. Participants were questioned whether they had experienced any difficulties in their emotional wellbeing since beginning university, how these had affected them across a range of life domains, and whether they had sought any support/help (as described in Section 3.3.4.3). Once completed, participants could register into the prize draw (to win a £15 voucher) through submitting their email address into a separate survey.

3.3.8 Statistical analysis

Data were analysed using SPSS V.21 (Chicago, IL, USA). Due to positively skewed data in the three screening measures, a range of non-parametric analyses were performed to explore associations between demographic characteristics, mental health symptomology,

and help-seeking behaviours. P-values $\leq .05$ were considered statistically significant.

3.4 Results

3.4.1 Demographics and response rate

Data were collected over two months (18th October-21st December 2012), and 761 participants completed the whole survey. Three requested their data be withdrawn, resulting in 758 participants. The survey tool meant it was not possible to estimate the numbers of non-completers. Complete datasets were obtained for the three core measures, and missing demographic data were excluded crosswise from relevant analyses. Using the most-recent registration data, an estimated 9564 undergraduate students received the study invitation, resulting in an estimated calculated response rate of 7.9%. Table 5 displays the sample's demographic characteristics. Nearly three-quarters (74.3%) were female, and so the sample was not representative of the two universities' gender balance (51-53% female) (Higher Education Statistics Agency, 2008; The University of Nottingham, 2012). For participants' parental educational background, 41.8% fathers and 40.8% mothers had been educated to undergraduate degree level or above. In terms of parental occupation, 17.5% (N=132) of mothers and 8.8% (N=66) of fathers were classified as *never worked/unemployed*; 56.6% (N=422) mothers and 38.9% (N=283) fathers were in *low/intermediate*

Table 5. Demographic composition of sample.

	Total N (%)*
Gender	
Male	190 (25.1)
Female	563 (74.3)
Age	
18-21	586 (77.3)
22-25	112 (14.8)
26-40	41 (5.4)
40+	19 (2.5)
Location	
University of Nottingham	524 (69.1)
Nottingham Trent University	231 (30.4)
Faculty of study	
Arts & Humanities	194 (25.6)
Science & Engineering	219 (28.9)
Medicine & Health Sciences	213 (28.1)
Social Sciences	129 (17.0)
Year of study	
1 st Year	212 (28.0)
2 nd Year	237 (31.3)
3 rd Year	190 (25.1)
4 th Year +	105 (13.9)
Fee status	
Home student	673 (88.8)
EU + International	78 (10.3)
Type of study	
Full-time	749 (98.8)
Part-time	6 (0.8)

* Totals do not all add up to 758 for each demographic item as some participants did not provide information.

occupations, and 20.4% (N=155) mothers and 44.9% (N=343) fathers were in *managerial/ professional occupations*.

3.4.2 Impact of self-reported emotional difficulties

A total of 532 (70.2%) participants reported experiencing emotional difficulties since starting university. A fifth (20.1%, n=152) had not

Table 6. Types of impacts felt by those with self-reported emotional difficulties.

Have your emotional difficulties	
affected your:	N (%)
Sleep	331 (62.2)
Social life	326 (61.3)
Relationships	318 (59.8)
Academic work	300 (56.4)
Eating	270 (50.8)
Behaviour	247 (46.4)
Physical health	188 (35.3)
Employment or job opportunities	51 (9.6)

experienced difficulties, while 69 (9.1%) were unsure. Of the 532 who experienced difficulties, almost half (n=255, 47.9%) screened for scores ≥ 10 on the GAD-7 or PHQ-9, or had a positive MDQ screen. In those self-reporting emotional difficulties, almost three-quarters (n=380, 71.1%) stated these had an impact upon their life. Additional qualitative descriptions of types of impact from seventeen participants were coded into categories presented in Table 6. The most common impact was their effect upon sleeping (62.2%).

3.4.3 Findings from the three screening measures

3.4.3.1 Depressive symptoms

Observed PHQ-9 scores ranged from 0 to 27, with a mean score of 7.32 (± 5.57) and median of 6. Using defined thresholds (Kroenke, et al., 2001), 38.9% (N=295) of the sample did not screen for any

depressive symptomology, 32.1% (N=243) for mild symptoms, 15.8% (N=120) moderate, 9.1% (N=69) moderate-to-severe and 4.1% (N=31) for severe symptoms. The most frequently reported depressive symptom was '*feeling tired or having little energy*' with N=634 (83.6%) stating this had occurred in the prior two weeks. This was the symptom most endorsed as being experienced on an almost daily basis (18.3%), with *trouble falling/staying asleep or sleeping excessively* also having almost daily occurrence (17.6%).

To explore the associations between depressive symptoms and demographic and academic variables, Kruskal Wallis and Mann Whitney U analyses were conducted. University, faculty of study, and two indices of parental socioeconomic background were significantly associated with differences in PHQ-9 scores (see Table 7). Post-hoc analyses after the initial Kruskal Wallis analysis for faculty of study ($H(3)=18.1, p=.01$) found Arts & Humanities students had significantly higher mean scores (8.63 ± 5.89) than Science & Engineering (7.13 ± 5.43 ; $Z=-2.64, p=.008$), Medicine & Health Sciences (7.02 ± 5.50 ; $Z=-2.96, p=.003$), and Social Sciences (6.19 ± 5.13 ; $Z=-4.05, p<.001$). Participants at NTU reported a significantly higher score (8.03 ± 5.84 vs 7.01 ± 5.43 at UoN; $Z=-2.308, p=.021$). Participants whose mothers did not complete higher education reported significantly higher scores (7.90 ± 5.72 vs. 6.80 ± 5.34 than those whose mothers completed higher education; $Z=-2.717, p=.007$), and higher scores were also found in those whose fathers were in the *never worked/unemployed* or

low/intermediate occupations category (7.83 ± 5.78 vs. 6.82 ± 5.26 than those whose fathers were in managerial/professional occupations: $Z=-2.127$, $p=.026$). There were no differences found between PHQ-9 scores and the other demographic factors.

3.4.3.2 *Anxiety symptoms*

Observed GAD-7 scores ranged from 0 to 21, with a mean score of 6.64 (± 5.16) and median of 6. Using defined thresholds (Spitzer, et al., 2006), 42.6% ($N=323$) screened for minimal probable anxiety symptoms, 32.5% ($N=246$) for mild symptoms, 14.8% ($N=112$) moderate and 10.2% ($n=77$) severe. The most frequently reported anxiety symptom was 'worrying too much about different things': 76% ($n=576$) reported this had occurred in the previous two weeks. This was also the most commonly reported daily symptom, with $n=108$ (14.3%) stating it had occurred almost every day.

To explore the associations between anxiety symptoms and demographic and academic variables, Kruskal Wallis and Mann Whitney U analyses were conducted. Gender, faculty of study, and maternal socioeconomic background were significantly associated with differences in GAD-7 scores (see Table 7). A significantly higher mean score was reported for female participants (6.87 ± 5.10 vs. 5.88 ± 5.20 in males: $Z=-2.847$, $p=.004$); participants whose mothers did not complete higher education (7.17 ± 5.31 vs. 6.15 ± 4.98 mothers who completed higher education: $Z=-2.67$, $p=.008$); and participants whose mothers were in the *never worked/unemployed* or *low/intermediate* occupations (6.89 ± 5.32

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vs. 5.66 ± 4.35 whose mothers were in managerial/professional occupations: $Z=-2.174$, $p=.03$). Post-hoc analyses after the initial Kruskal Wallis analysis for faculty of study ($H(3)=9.62$, $p=.024$) found the same findings as with PHQ-9 scores: participants in Arts & Humanities reported the highest mean scores (7.58 ± 5.50) compared to Science & Engineering (6.45 ± 5.03 : $Z=-2.90$, $p=.037$), Medicine & Health Sciences (6.48 ± 5.05 : $Z=-1.986$, $p=.047$), and Social Sciences (5.86 ± 4.90 : $z=-2.92$, $p=.003$). There were no significant differences in GAD-7 scores for other demographic factors, but a chi-square test neared significance for fathers' occupation category ($Z=-1.939$, $p=.053$).

3.4.3.3 *Manic and hypomanic symptoms*

Observed MDQ scores ranged from 0 to 13, with the mean score being $4.22 (\pm 3.43)$ and a median of 4. A fifth ($N=192$, 25.3%) reported 'high' MDQ scores (endorsed ≥ 7 items). Of this number, $N=53$ (7% of total sample) met criteria for a positive screen for probable BSD (i.e. symptoms occurred in same period and were a moderate-to-serious problem). The most endorsed item was 'feeling easily distracted and difficulties concentrating/staying on track' ($N=427$, 56.3%).

Chi-square analyses were performed in those who met the threshold for a positive MDQ screen ($N=53$) to explore whether there were any associations between having a positive screen and demographic variables. Screening for a positive MDQ screen was associated with

being a home student (N=52/7.7% vs. N=1/1.3% international students: $\chi^2(1)= 4.426$, $p=.035$); being at NTU (n=23/10% vs n=30/5.7% at UoN: $\chi^2(1)= 4.398$, $p=.036$); and having a father in a lower occupation category (N=33/9.1% vs. n=16/4.7% managerial/professional: $\chi^2(1)=5.25$, $p=.022$). Post-hoc chi-square analyses for age categories (exact $\chi^2(13)=12.26$, $p=.038$) found a lower percentage of participants in the 18-21 year age group screened positive (N=33, 5.6%) compared to 22-25 year olds (N=12/10.7%: $\chi^2(1)=4.03$, $p=.045$) and 26-41 year olds (N=8/19.5%: two-tailed Fisher Exact $\chi^2(1)=12.08$, $p=.003$). Analyses found no association between MDQ screen and other demographic factors, but approached significance for fathers' education, $\chi^2(1) = 3.55$, $p=.06$. Two-thirds (N=35, 66%) of those with positive MDQ screens also screened for moderate-to-severe anxiety or depressive symptomology.

Table 7. Means (SDs) PHQ-9 and GAD-7 scores for each demographic variable.

Demographic factors	PHQ-9		GAD-7	
	M (SD)	Test statistic	M (SD)	Test statistic
Gender				
Male	6.78 (5.56)	Z=-1.76	5.88 (5.20)	Z=-2.84**
Female	7.48 (5.56)		6.87 (5.10)	
University of study				
University of Nottingham	7.01 (5.43)	Z=-2.30*	6.55 (5.12)	Z=-.742
Nottingham Trent University	8.03 (5.84)		6.87 (5.25)	
Faculty of study				
Arts & Humanities	8.63 (5.80)	H=18.12***	7.58 (5.50)	H=9.62*
Science & Engineering	7.13 (5.43)		6.45 (5.03)	
Medicine & Health Sciences	7.02 (5.50)		6.48 (5.05)	
Social Sciences	6.19 (5.13)		5.86 (4.90)	
Year of study				
1st Year	7.79 (5.55)	H=5.58	6.85 (5.40)	H=.148
2nd Year	7.32 (5.66)		6.65 (5.20)	
3rd Year	6.52 (5.00)		6.59 (5.30)	
4th Year and beyond	6.43 (4.92)		7.6 (5.73)	
Fee status				
Home student	7.40 (5.65)	Z=-.256	6.72 (5.23)	Z=-.346
International student	6.91 (4.88)		6.17 (4.43)	
Mother's education level				
Did not complete higher education	7.90 (5.72)	Z=-2.71	7.17 (5.31)	Z=-2.27**
Completed higher education	6.80 (5.34)		6.15 (4.98)	

Father's education level				
Did not complete higher education	7.56 (5.47)	Z=-1.22	9.95 (5.31)	Z=1.19
Completed higher education	7.22 (5.76)		6.43 (5.05)	
Mother's occupation category				
Unemployed or low/intermediate	7.52 (5.70)	Z=-1.39	6.89 (5.32)	Z=-2.17*
Managerial/professional	6.60 (4.91)		5.66 (4.35)	
Father's occupation category				
Unemployed or low/intermediate	7.83 (5.78)	Z=-2.27**	7.05 (5.32)	Z=-1.93
Managerial/professional	6.82 (5.26)		6.23 (4.91)	

NB: * = significant at ≤ 0.05 level; ** = significant at ≤ 0.01 level;

*** = significant at ≤ 0.001 level.

3.4.3.4 *Functional impact of symptoms*

Optional questions assessed the perceived functional impact of probable depressive, anxious and hypomania/mania symptoms upon participants' functioning in typical daily tasks. For analysis, these were collapsed into two categories reflecting minimal ("not or somewhat difficult") and more severe ("very or extremely difficult") impact. Chi-square analyses were conducted to explore associations between level of anxiety and depressive symptom impact upon functioning and help-seeking behaviour.

For anxiety and depressive symptoms, participants who screened for more severe functional impairment were more likely to have sought professional help (GAD-7 χ^2 (1)=34.16, $p < .001$; PHQ-9

$\chi^2(1)=34.02$, $p<.001$), sought university services (GAD-7 $\chi^2(1) = 8.047$, $p=.005$; PHQ-9 $\chi^2(1) = 9.00$, $p=.003$), and used self-help (GAD-7 $\chi^2(1)=25.57$, $p<.001$; PHQ-9 $\chi^2(1)= 31.528$, $p<.001$), compared to those with minimal impairment. Impairment due to anxiety symptoms was significantly associated with using informal help ($\chi^2(1)=9.91$, $p=.002$), but neared significance for depressive symptoms ($\chi^2(1)=3.609$, $p=.057$). Increased impact on the MDQ was associated with increased use of professional help (two-tailed Fisher exact $\chi^2(3)=56.83$, $p<.001$); university services (two-tailed Fisher exact $\chi^2(3)=20.11$, $p<.001$); self-help (two-tailed Fisher exact $\chi^2(3)=29.17$, $p<.001$); and neared significance for informal help ($\chi^2(3)=7.46$, $p=0.058$). These findings need to be treated cautiously due to low numbers in the more severe impairment categories.

3.4.4 Elevated symptomology within sample

A dichotomous variable was created reflecting participants' symptomology screens: 1) those who screened for the "none"/"minimal"/"mild" thresholds on both PHQ-9 and GAD-7 (i.e. scores ≤ 9 on both measures) and did not positively screen for hypomanic/manic symptoms on the MDQ; 2) screened for "moderate"/"moderate-to-severe"/"severe" threshold on either the PHQ-9 or GAD-7 (i.e., scores of ≥ 10 on either measure) or who reported a positive MDQ screen. This was to reflect the point at which participants' elevated symptomology would be considered

clinically significant and might initiate professional help-seeking. Scores of ≥ 10 on GAD-7 and PHQ-9 are considered credible cut-off scores for positive screens of GAD and depression, and individuals with PHQ-9 scores of ≥ 10 are more likely to meet diagnostic criteria for a probable depressive disorder (Manea, Gilbody, & McMillan, 2012; Schwenk, et al., 2010; Spitzer, et al., 2006).

In the present study, 276 participants (36.4%) screened for elevated probable depression, anxiety or elevated hypomania/manic symptoms (hereafter called "elevated symptomology"), with 482 (63.6%) screening into the zero/minimal symptom category. Of the 276 screening for elevated symptoms, 255 (92.4%) also self-reported experiencing emotional difficulties, suggesting participants had strong awareness of their mental well-being. Table 8 shows the profile of symptoms in these two groups.

Table 8. Profile of anxiety and depressive symptoms in sample, sub-grouped by level of screened symptomology.

NB: None/mild symptoms (n=482); elevated symptoms (n=276).

Measure	Level of symptomology	Frequency of symptoms N (%)	
Anxiety symptomology (GAD-7)		'Several days' or 'more than half the days'	'Nearly every day'
1. <i>Feeling nervous, anxious, or on edge</i>	<i>None/mild</i>	299 (62.0)	1 (0.2)
	<i>Elevated</i>	176 (63.8)	84 (30.4)
2. <i>Not being able to stop or control worrying</i>	<i>None/mild</i>	186 (38.6)	2 (0.4)
	<i>Elevated</i>	175 (63.4)	77 (27.9)
3. <i>Worrying too much about different things</i>	<i>None/mild</i>	300 (62.3)	11 (2.3)
	<i>Elevated</i>	168 (60.9)	97 (35.1)
4. <i>Trouble relaxing</i>	<i>None/mild</i>	240 (49.8)	1 (0.2)
	<i>Elevated</i>	177 (64.2)	77 (27.9)
5. <i>Being so restless that it's hard to sit still</i>	<i>None/mild</i>	110 (22.8)	1 (0.2)
	<i>Elevated</i>	142 (52.5)	44 (15.9)
6. <i>Becoming easily annoyed or irritable</i>	<i>None/mild</i>	277 (57.4)	5 (1.0)
	<i>Elevated</i>	183 (66.3)	65 (23.6)
7. <i>Feeling afraid as if something awful might happen</i>	<i>None/mild</i>	99 (20.5)	0 (0.0)
	<i>Elevated</i>	166 (60.2)	38 (13.8)
Depressive symptomology (PHQ-9)			
1. <i>Little interest or pleasure in doing things</i>	<i>None/mild</i>	154 (32.0)	3 (0.6)
	<i>Elevated</i>	193 (69.9)	29 (10.5)

2. <i>Feeling down, depressed, or hopeless</i>	<i>None/mild</i>	206 (42.8)	0 (0.0)
	<i>Elevated</i>	194 (70.2)	58 (21.0)
3. <i>Trouble falling/staying asleep, sleeping too much</i>	<i>None/mild</i>	252 (52.3)	24 (5.0)
	<i>Elevated</i>	144 (52.2)	9.5)
4. <i>Feeling tired or having little energy</i>	<i>None/mild</i>	349 (72.4)	4)
	<i>Elevated</i>	146 (52.9)	2.8)
5. <i>Poor appetite or overeating</i>	<i>None/mild</i>	198 (41.1)	7 (1.5)
	<i>Elevated</i>	145 (52.6)	80 (29.0)
6. <i>Feeling bad about yourself – or that you are a failure or have let yourself or your family down</i>	<i>None/mild</i>	157 (32.6)	2 (0.4)
	<i>Elevated</i>	152 (55.0)	80 (29.0)
7. <i>Trouble concentrating on things, such as reading the newspaper or watching television</i>	<i>None/mild</i>	159 (33.0)	3 (0.6)
	<i>Elevated</i>	183 (66.3)	38 (13.8)
8. <i>Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual</i>	<i>None/mild</i>	32 (6.6)	0 (0.0)
	<i>Elevated</i>	103 (37.4)	7 (2.5)
9. <i>Thoughts that you would be better off dead or of hurting yourself in some way</i>	<i>None/mild</i>	15 (3.1)	0 (0.0)
	<i>Elevated</i>	86 (31.1)	16 (5.8)

3.4.4.1 Factors associated with screening for elevated symptomology

Using the conditional forward elimination model, a binominal regression analysis was conducted to examine differences in demographic factors between participants who did and did not screen for elevated symptomology. The final regression model suggested participants whose mothers did not complete higher education and those studying degrees within Arts & Humanities and Medicine & Health Sciences were more likely to screen for elevated symptomology; $X^2(4)=17.139$, $p=.002$. Participants whose mothers did not complete higher education were 1.44 times (CI 1.03 to 2.02) more likely to screen for elevated symptoms. Compared to Social Sciences, participants in Arts & Humanities were 2.4 times (CI 1.42 to 4.06) more likely to screen for elevated symptomology, $p=.001$. Likewise participants in Medicine & Health Sciences were 1.67 times (CI 0.99 to 2.81) more likely to screen for positive symptomology compared to Social Sciences, although this just reached significance ($p=.05$). Nagelkerke's R^2 of 0.036 suggests a poor relationship between prediction and grouping. All other demographic factors were not significant predictors.

3.4.4.2 Factors associated with help-seeking in participants with elevated symptomology

To examine associations between elevated symptomology and help-seeking behaviour for emotional difficulties, several chi-square

analyses were performed. Only participants who screened for elevated symptomology (n=276, 36.4%) were included in these analyses, as this group may have been more likely to seek help given symptom severity and their impairment. For analysis, types of help were merged into four categories:

1. *Professional help*: healthcare professionals (e.g. GPs), university counselling services, university mental health advisors, and charity services.
2. *University services*: tutor/supervisor/lecturer, university study support, student services and students' union
3. *A form of self-help*: chaplaincy, religion, internet-based information, self-help materials (e.g. books, internet programs)
4. *Informal help*: friends, partners, family members.

Overall, 60.9% (N=168) reported they had not sought professional help for their emotional difficulties, with the remainder (39.1%, N=108) having sought professional help. Table 9 displays the sources of help used by participants screening for elevated symptomology. After an initial chi-square test for age ($\chi^2(3)=13.578$, two-tailed $p=.004$), post-hoc analyses revealed differences in professional help-seeking between the 18-21 years and 22-25 years age group, $\chi^2(1)=13.63$, $p<.001$, (OR 0.29 (CI 0.15 to 0.57). Those in the older age category were more likely to have sought professional help (n=29/63% vs N=69/33.7% in younger group). Participants with mothers from *never*

Table 9. Types of help sought in participants screening for elevated symptomology (N=276).

Sources of help	Numbers reporting use (%)
Informal help	
Friends	149 (54.0)
Family	109 (39.5)
Professional help	
Healthcare professional	88 (31.9)
University counselling services	53 (19.2)
University mental health advisor (or equivalent)	22 (8.0)
University services	
Tutor/supervisor/lecturer	46 (16.7)
Student services	5 (1.8)
Study support	20 (7.2)
Students' Union	3 (1.1)
Self-help	
Used internet	77 (27.9)
Self-help (various strategies)	50 (18.1)
Chaplaincy or religion	2 (0.7)
Sought no help	42 (15.2)
No answer	25 (9.1)

worked/unemployed and *low/intermediate* occupations represented 34% of those with elevated symptoms who had sought professional help, compared to 4.6% in the *managerial/professional* category: $\chi^2(1)=4.413$, $p=.042$, OR 2.06 (CI 1.01 to 4.21). The odds ratio suggests students with elevated symptoms from lower socioeconomic backgrounds were two times more likely to have

sought professional help. Although it only approached significance ($\chi^2(3)=7.789$, $p=.051$), students in Medicine & Health Sciences appeared more likely to have sought professional help ($n=39/14.9\%$), compared to Arts & Humanities ($N=27$, 9.8%), Science & Engineering ($N=26$, 9.5%) and Social Sciences ($N=16$, 5.8%).

Use of university-based services was significantly associated with being at UoN ($N=45/24.5\%$ vs. $N=13/14.1\%$ at NTU: $\chi^2(1)=4.025$, $p=.045$) and faculty of study ($\chi^2(4)=11.385$, $p=.023$). Post-hoc analyses revealed significant differences in their use between Medicine & Health Sciences students ($N=25/32.9\%$ within faculty) and Arts & Humanities ($N=9/10.8\%$: $\chi^2(1)=11.47$, $p=.001$) and Science & Engineering ($N=15/19\%$: $\chi^2(1)=3.91$, $p=.048$). No significant associations were found between use of self-help and demographic factors and socioeconomic indices. Males were less likely to use informal help ($N=28/16.5\%$ vs. $N=142$, 83.5% in females: $\chi^2(1)=12.20$, $p<.001$). After the initial chi-square test for faculty ($\chi^2(3)=4.48$, $p=.043$), post-hoc analyses found that participants within Science & Engineering reported significantly less use of informal help ($N=40$, 50.6%) than those in Medicine & Health Sciences ($N=55$, 72.4% : $\chi^2(1)=7.17$, $p=.005$).

3.5 Discussion

A total of 758 undergraduate students across two universities participated. This was a moderate sample size given not all schools

were invited. Almost two-thirds (60.9%) of those with probable elevated symptomology had not sought out professional help for their mental well-being. Likewise, friends and family were sources most used when participants experienced difficulties. This aligns to previous research showing young people and university students prefer familiar informal help for their emotional difficulties, and professional help-seeking is limited in those with elevated symptomology (Ryan, et al., 2010; Schwenk, et al., 2010).

3.5.1 Symptomology within the sample

Over a third (36.4%) screened for either moderate-to-severe probable depressive or anxiety symptoms, or screened for elevated hypomania/mania, suggesting a considerable percentage were experiencing clinically-significant mental distress. This is consistent with previous research showing 29-33% of student samples screened for clinical-levels of mental distress (Bewick, Gill, Mulhern, Barkham, & Hill, 2008; Pirbaglou, et al., 2013).

Sixteen studies in a recent systematic review found a significant small effect suggesting female students experience higher rates of probable depression (Ibrahim, Kelly, Adams, et al., 2013). The present study found no gender differences for depressive symptomology. This could be due to the nature of university life. Although students are increasingly heterogeneous in terms of their socioeconomic backgrounds, female and male students both

experience common university-based stressors (e.g. academic assessments) (Ibrahim, Kelly, & Glazebrook, 2013).

The PHQ-9's final item assesses suicidal ideation and self-harm risk. Almost a sixth (15.4%) endorsed this item occurring in the two weeks prior to participation. In a British undergraduate cohort, 17.2% of females and 7% of males experienced self-harming thoughts in their current academic year, with 7.4% reporting self-harm behaviour (Wright, Bewick, Barkham, House, & Hill, 2009). Participants' answers to this item may not be fully accurate, as discrepancy between severity of measured symptomology and the individual's perceptions of suicidal intentions and self-harm may occur (Malpass, et al., 2010). Measures may not assess other symptoms or related events salient to the population (Malpass, et al., 2010), such as impaired academic performance. The University Student Depression Inventory (USDI) (Khawaja & Bryden, 2006) has potential for providing a more valid picture of student depression. This was developed in response to methodological issues with common psychometric measures, such as measuring symptoms that are prominent in students (e.g. sleeping difficulties) regardless of their current mental health (Khawaja & Bryden, 2006). Likewise, the authors state that student depression is typically more cognitive in presentation, and popular measures do not overly consider this. While this would be useful for further understanding student depression, it would limit the ability to compare findings

with other studies involving non-students and might question longitudinal usability if administered post-graduation.

Female participants were more likely to screen for anxiety, which aligns with previous findings (Bewick, Gill, et al., 2008; Samaranayake & Fernando, 2011; Shiels, Gabbay, & Exley, 2008; Webb, Ashton, Kelly, & Kamali, 1996; Wong, Cheung, Chan, Ma, & Wa Tang, 2006). The survey's one-off administration means conclusions cannot be made about whether they were in a current heightened state of anxiety. The present study was conducted in the first semester: Bewick et al. (2010) found undergraduates' anxiety levels peak during the first semester, regardless of year of study.

Students studying Arts & Humanities degrees reported significantly higher probable depressive and anxiety symptomology in comparison to the other three faculties, and was a significant predictor for overall elevated symptomology. Turner et al. (2007) found 85% of Art & Design students reported experiencing mental health problems, more than their other sampled faculties. Similarly students studying non-health degrees reported more psychological distress than health-based courses (Samaranayake & Fernando, 2011). This could be due to degree structure within Arts & Humanities subjects; these courses may have less contact time and timetabled hours than other courses, meaning these students are managing their own time and have less structure. Likewise, these courses may be introspective, dealing less with 'facts' and more with

personal reflection and insight. Students on courses with more certain career paths may have fewer worries about employment than students with more uncertain job pathways (Samaranayake & Fernando, 2011). Arts & Humanities students may benefit from timetabling strategies to help them manage their unscheduled time.

The numbers who positively screened for probable BSD (7%) is higher than the 4% of UK and 1.7% of US students previously reported by Chandler et al. (2008) and 3.2% in a South Korean student sample (Bae, et al., 2014). However it is lower than the 11% rate found in a previous Nottingham student sample (Rawlings, 2012) and 25.1% in a psychology student sample, even though the screening threshold was raised by the authors (Udachina & Mansell, 2007). The MDQ's sensitivity and specificity is sufficient in clinical samples but weakens in community/general population samples (Chandler, et al., 2008; Zimmerman & Galione, 2011). Many MDQ items reflect experiences common in university students; therefore the measure may have limited applicability in screening for probable BSD in students (Miller, et al., 2011). These findings need to be treated cautiously as diagnosis cannot be inferred solely from this measure (Miller, et al., 2011). In the present study, many with a positive MDQ screen also had elevated depressive and/or anxiety symptomology; a previous study with a student sample found positive MDQ screens were associated with high probable depression scores (Udachina & Mansell, 2007). Given that BSD involve episodes of depression, this co-morbid finding is not unsurprising.

3.5.2 Commonality of symptoms

Feelings of tiredness/lethargy and worrying too much about different things were the most commonly reported depressive and anxiety symptoms, and those screening for elevated symptomology were more likely to report that these symptoms had almost daily recurrence in the previous two weeks. Sleeping difficulties were the most common symptom in an Omani student cohort (Al-Busaidi, et al., 2011), and reiterates that sleeping problems are a significant health concern in students (Brown, Buboltz, & Soper, 2002). In elevated participants, a relatively small percentage were experiencing the two core depressive symptoms on an almost-daily basis. The endorsement of tiredness/fatigue and sleeping difficulties may inflate PHQ-9 scores.

Sleeping problems and fatigue are also the most commonly experienced psychological problems in the general population (Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2003). Sleeping problems can lead to psychological distress, and chronic unsatisfactory sleep and problems are risk factors for depression (Brown, et al., 2002). Unsatisfactory sleep quality has been linked to negative moods and emotions in students (Lund, Reider, Whiting, & Prichard, 2010). Students' sleeping difficulties can have a detrimental effect upon skills needed for academic, social and occupational functioning (Brown, et al., 2002). However, students' sleep problems may be due more to environmental and lifestyle

circumstances, rather than being symptomatic of depression (Romaniuk & Khawaja, 2013). The acuteness or chronicity of students' sleeping problems, nor their diagnoses of sleeping disorders, were not explored in the study. Nonetheless, it is important to develop better sleeping practices in students for their physical and mental well-being. Interventions may have potential as students may lack awareness or the self-efficacy to practice good sleep hygiene (Kloss, Nash, Horsey, & Taylor, 2011). One brief face-to-face intervention reported improvements in students' sleep quality, number of sleep disturbances and decreased sleep medication use (Brown, Buboltz Jr, & Soper, 2006). Finally, the timing of the study may affect findings as new students may naturally experience sleeping problems in adapting to the new environment. Likewise the cross-sectional design meant limited assessment of the symptom longevity; one longitudinal study suggests students' depressive and anxiety symptoms do fluctuate throughout university (Bewick, et al., 2010).

Of the 276 with an elevated screen, 71.7% (N=178) reported their emotional difficulties had affected their academic work. One free-text comment stated *"lots of pressure improved my academic work as it made me work harder"*, which may suggest not all difficulties produce negative consequences. Unfortunately, no assessment was made between participants' symptomology and academic performance. Students will differ in how they perceive, appraise and manage potentially stressful events (Robotham & Julian, 2006), and

some could use perceived pressures to their advantage. Use of problem-focused coping strategies has been associated with students' ability to manage academic stress and use of university services (Julal, 2012; Struthers, Perry, & Menec, 2000). Relatedly, perfectionism may be an important issue in students given the pressure to be academically successful (Hamilton & Schweitzer, 2000). Maladaptive perfectionist traits are a risk factor for development of, and are associated with, depression, anxiety, eating disorders, and suicidal ideation in university students (Hamilton & Schweitzer, 2000; Pirbaglou, et al., 2013; Sherry, et al., 2003).

3.5.3 Functional impact of symptoms

The optional item assessing functional impact of symptomology appears neglected in previous research. This was investigated in the present study given that students are focusing on attaining a higher degree, and ill mental health and ability to cope with difficulties can interfere with their academic performance and attainment (Hysenbegasi, et al., 2005). A significant proportion stated their symptoms had a moderate-to-severe impact on their functioning in typical tasks. These optional questions could relate to participants' perceived difficulty of coping with symptoms. A relevant measure, such as the Work and Social Adjustment Scale (Mundt, Marks, Shear, & Greist, 2002) and data relating to academic performance,

would be useful to further explore the impact of students' mental health difficulties.

3.5.4 Links between elevated symptomology and socioeconomic status

Significant associations suggested students from lower socioeconomic backgrounds reported greater likelihood of screening for elevated symptomology and using professional help. This supports previous research suggesting an inverse link between students' socioeconomic status and mental health (Eisenberg, Gollust, et al., 2007), and associations between mothers' education and students' elevated symptomology. In a survey of British students, Ibrahim, Kelly and Glazebrook (2013) found students whose mothers had higher levels of education were less likely to screen for depressive symptomology. Likewise seven studies in the recent systematic review found a negative relationship between parents' income level and their child's depressive symptomology (Ibrahim, Kelly, Adams, et al., 2013). There were fewer participants from NTU whose parents were within the 'higher' educational and occupational categories, which may be a reason why studying at NTU was associated with higher PHQ-9 scores. It is interesting that the significant link is found for mothers' education level, but not for fathers' education or occupational status. It may be that university-educated mothers are more able to provide financial, emotional and practical support to their offspring.

Participants whose fathers had lower-ranking occupations were associated with increased likelihood to have a positive MDQ screen. In a review exploring risk factors, a small number of studies have found higher levels of parental education and higher occupational class have been associated with increased risk of developing probable BSD (Tsuchiya, Byrne, & Mortensen, 2003), but the small number of studies within this review and the present study's contrasting findings means it is still difficult to decipher this association. It may be that parents from lower socioeconomic backgrounds may need some guidance in supporting their child whilst they are at university. These associations could be explored through conducting research involving parents of university students, as parent-based research is rare for this topic. Use of other SES indices may also be problematic in exploring associations; for example, assessing parental income may be difficult for students as they may not be aware of their parents' earnings (Ibrahim, Kelly, & Glazebrook, 2013). An SES marker which may be more relevant are the monetary loans and grants students receive to support their higher education.

3.5.5 Help-seeking behaviours within sample

There are many societal, attitudinal, and environmental reasons why young adults with elevated symptoms may not seek professional help (Gulliver, et al., 2010). The present study's findings show a gap in the proportion of students experiencing elevated symptomology

and those who had sought professional help. Students' reasons for non-help-seeking were not explored, and so we can only speculate as to the apparent under-treatment of elevated symptomology. Different faculties may vary in the services they provide to students; in the present study, those within Medicine & Health Sciences were more likely to have used university-based services. Given the nature of their course, students studying healthcare practitioner degrees may have specific services available to them or receive more supervision.

The majority (92.4%) who had elevated symptomology also perceived themselves to have experienced emotional difficulties, and so some may be rationalising their symptoms as not requiring help. The Cycle of Avoidance (Biddle, et al., 2007) theorises two types of "mental distress": young "normal" mental distress (as experienced by everyone, perceived as normal and not requiring help), and "real" distress (chronic and visibly impairing). Help may only be sought for "real" distress, with a crisis point instigating help. The present sample may have not experienced a crisis point, and so not perceive a need for help. People experiencing mental distress often attribute symptoms to lifestyle circumstances (Biddle, et al., 2006; Kessler, Lloyd, Lewis, & Gray, 1999), and so students may attribute symptoms as being experienced by all students. This may also be true for sleeping difficulties and fatigue, as these problems may be perceived as being typical of student lifestyles and so do not require intervention. Students may be unaware of how sleeping difficulties

and insomnia are risk factors for several physical and mental health issues. Likewise, academic staff may also lack symptom recognition or may perceive students' mental health difficulties as being 'normal stress' (Tinklin, et al., 2005).

There was limited assessment of students' help-seeking behaviour in the present study. Help-seeking consists of several factors including types of help sources, the problem requiring help, and the timeframe of help-seeking (Rickwood, et al., 2012). The present study only assessed behavioural aspects and was ambiguous in asking what problem/issue students specifically sought help for, and did not assess current treatment status. Similarly participants' satisfaction with help sought was not accessed. Future research should endeavour to use standardised measures in assessing influential factors upon students' help-seeking (e.g. attitudes towards help sources), and explore the influence of social support upon their help-seeking decisions given their considerable use of informal help sources. Finally a further limitation is that participants were not asked how long it took them to seek help, or whether there were any prompts for seeking help. This is another important factor, as young adults may not seek assistance until they experience a crisis point (Biddle, et al., 2007).

3.5.6 Implications for practice

The findings are important for institutions and professionals working in student health. Universities need to consider how they can reach

out to students who are experiencing elevated distress and do not seek help, and challenge any identified barriers to accessing services. Interventions would be useful in helping build and strengthen positive coping skills in university students, so that they can manage their own difficulties in an adaptive manner.

Given the associations between students' elevated symptomology, help-seeking and their parents' SES, universities may need to consider the mental health needs of students coming from lower socioeconomic backgrounds. These students may not be receiving sufficient help from their parents. Many universities already provide financial support to poorer students, but there may be additional needs to increase student access to university-based academic and welfare services.

Over half (54%) who screened for elevated symptomology had sought help from a friend. Peers may vary in the quality of support they can provide to a friend experiencing a mental health problem. University students may benefit from education to improve their mental health literacy, and skills training in order to be able to support others, such as through Mental Health First Aid (MHFA) educational courses (Jorm, 2012).

The association found for screening for elevated symptoms and parental socioeconomic indices suggests that support or intervention may also be appropriate for parents, so that they are able to support their child whilst at university. Parents without experience of higher education may not have such a strong grasp of student

life, and might benefit from education about what they can do to support their child when they are living away from home. Parents may also need skills to best support their child if they are experiencing mental health difficulties. A booklet-based intervention for parents to reduce their child's binge drinking behaviour was reported to be effective in helping improve outcomes relating to their child's alcohol consumption (Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001), and this approach could be applied to mental health outcomes.

3.5.7 Strengths and limitations

Present findings may differ from previous student-based studies due to the inclusion of students from several faculties. Ibrahim et al. (2013) found a higher prevalence rate in studies which recruited students from a range of disciplines (mean 35.6%) than just medical students (29.6%), suggesting elevated depressive symptomology is present across a range of faculties and not just isolated to medicine students.

The survey's wording may have been both an advantage and a hindrance. The terms "emotional health"/"emotional difficulties" may have affected participants' self-identification of mental health difficulties. Participants were provided with a brief description of "emotional difficulties", and so had some direction as to what these were. However, what participants perceived as being emotional difficulties may not have been considered clinically significant. A

proportion (N=277) did not screen for elevated symptomology, but self-reported emotional difficulties since starting university. Mild anxiety and depression are still important, given the importance of early intervention to treat sub-threshold symptoms and prevent future onset of mental disorders (Reavley & Jorm, 2010).

A previous survey-based student study mentioned it was conducted in one highly-competitive university, which may affect translatability of findings onto other institutions (Eisenberg, Gollust, et al., 2007). The two universities in the present study were in the same locality, but differ in their reputation and intake. The sample's composition showed variation in parental socioeconomic backgrounds, and hopefully represented the heterogeneity of the local student population.

The calculated estimated response rate was minimal. Survey-based research can be problematic in student populations as they may have more prioritising tasks (e.g. academic work) that affect their choice to participate in research (Shiels, et al., 2008). Short-term and changeable living arrangements are common for university students, meaning they may not receive or respond to paper-based assessments (Shiels, et al., 2008). We attempted to overcome this through online administration and email-based circulation, so participants could complete it at a convenient time. Low response rates have been linked to reporting higher depression prevalence rates in students, meaning findings may be less valid and generalizable (Ibrahim, Kelly, Adams, et al., 2013).

The number of international students who participated was similar to the percentage in the undergraduate student body at NTU, but not at UoN (Higher Education Statistics Agency, 2014b). Likewise 77.5% of UoN participants were aged 18-21 years; in the most recent data, 89% of undergraduates were 18-20 years old (The University of Nottingham, 2013). Consequently the sample was not fully representative, and cannot be generalised to all Nottingham-based university students. The sample's skewed gender balance appears to be common in student prevalence studies (Garlow, et al., 2008; Ibrahim, Kelly, Adams, et al., 2013; Shiels, et al., 2008) and may either exacerbate or mask gender differences (Ibrahim, Kelly, & Glazebrook, 2013). Males may have additional stigmatising attitudes that may influence their decision to take part in such research (NUS Scotland, 2010). However the study's wording did not include terms directly related to mental health, which may have helped counteract any perceived stigma. Self-selection bias may have meant students with an active interest in mental health or a mental health problem may have been more likely to participate.

There was variation in the numbers of participants from each faculty. Healthcare students may be considered a unique sub-group due to their demanding course, and have been reported as being more likely to experience ill mental health than the general population (Schwenk, et al., 2010), but the present study suggests Arts & Humanities students may be more at risk. Sampling students from medicine and psychology courses could potentially bias

findings, as these students may be more aware of their own mental health and have an interest in the topic (Wilson, et al., 2007).

All measures were established and had evidence to support their psychometric properties; however they were not diagnostic tools and cannot infer those screening for elevated symptoms would meet criteria for a mental disorder. For this reason, the terms “depressive” and “anxiety/anxious” symptomology have been used. Many additional factors affecting students’ mental health (e.g. sense of control, coping styles) were not assessed in the present study, as we wanted to encourage study completion through keeping the survey succinct.

Exploration of the data suggested there were no duplicates; however it is possible a participant may have participated more than once. Some participants may have preferred paper-based measures, or had concerns about online data security. As an aim of this study is to help inform development of an online resource for management of depression in local university students, it may demonstrate that students find it acceptable to use internet-based resources for their mental health and would be inclined to use such resources.

This online survey scoped the thesis in several ways. The gap between participants’ experiencing elevated symptomology and help-seeking behaviour could be addressed through education about symptom recognition and early intervention. Additionally, students’ use of informal help means there are many young people responding to friends experiencing mental health difficulties, and

they may be unsure about how to support others. Students may have insufficient knowledge about help available, or hold beliefs that hinder their ability to seek help or provide help to others.

3.5.8 Implications for aims of thesis

Several findings applicable to the intervention's development emerged from this cross-sectional survey. These important findings include the limited use of professional help in those with elevated symptoms, and the considerable use of informal help in this subgroup; sleeping problems were the most commonly reported depression-related symptom; and studying an Arts & Humanities degree subject and lower maternal education were significant predictors of screening for elevated symptomology. Although no definite inferences can be made from this one-off survey, it was speculated that a significant number may be self-managing their symptoms and using self-help prior to professional help. It has been suggested that people experiencing psychological distress often use different types of "steps" depending on the severity of distress, starting with increasing everyday strategies, then using self-help and finally using professional help for more severe distress (Jorm, Griffiths, Christensen, Parslow, & Rogers, 2004). This could be applied to the intervention through having a section that provides psycho-education and guidance about effective self-help strategies, and also information about how to recognise when elevated symptoms might require professional help. Furthermore, the

sample's considerable use of friends and family for help and support could have implications regarding providing education about how to support someone in need. Likewise, as lower maternal education was associated with elevated symptomology, the intervention may also need a section for parents about how they can support their child at university and/or living away from home. Finally, the descriptive statistics sourced from the three measures could be used within the intervention to show potential users the commonality of symptoms in this population. These could also be used within an interactive screening tool: users could complete the PHQ-9 within the intervention, and provided with feedback, which compares their scores to those from this survey. However, the ability to do this will depend upon the programming tools available in intervention development, and the benefits and risks of doing this will need to be considered.

3.6 Conclusions

Elevated levels of anxiety and depressive symptoms are evident in the local student population, with a third of students reporting current elevated distress in a two-week period and significant functional impairment. Sleeping problems and over-worrying were the most prevalent symptoms relating to probable depression and anxiety. Maternal SES and faculty of study were found to be significant predictors of elevated symptomology. It is clear that students' help-seeking, particularly from professional sources, is

limited. Students may be self-managing their difficulties or not perceiving a need for help, and so students need to have the capabilities and skills to sufficiently look after themselves and others. An online intervention, which integrates into their university lifestyle, may be appropriate for this population, to improve students' mental health and help-seeking. As socioeconomic factors have been shown to have some associations with mental health, there may be an additional need to investigate parental support and the potential for parental interventions to help support their child at university.

Chapter Four: Study Three - Exploring university students' experiences of changes in mental well-being in higher education: a qualitative study

4.1 Introduction

For a prolonged period of time, activities relating to students' education, leisure, welfare and social life, are centred on campus or a localised area. This allows a distinct setting for mental health promotion, given the localisation of many daily activities that university students undertake, wherein they are developing independence and self-management of their mental well-being. Adjusting to the new experiences and changes associated with university life is expected to impact upon students' mental wellbeing (Dunne & Somerset, 2004; Royal College of Psychiatrists, 2011). As outlined in Chapters One and Three, depression and anxiety are common mental health problems experienced by university students. There has been some qualitative exploration of young people's experiences of mental health difficulties and related help-seeking behaviours, including exploring perceptions about GPs as a source of mental health-related help (Biddle, et al., 2006); experiences of being a university student with a diagnosed mental disorder (Demery, et al., 2012; Martin, 2010; Waelkens, Weiner, Liétaer, & Vliegen, 2008); perspectives of receiving psychiatric treatment whilst at university (Kranke, et al., 2013); and medical students' attitudes towards seeking help for mental health problems

(Chew-Graham, et al., 2003). Likewise, there has also been qualitative exploration focusing on the developmental and pedagogical aspects of studenthood, which are also likely to affect students' mental health, such as students' experiences of social support in adjusting to higher education (Wilcox, Winn, & Fyvie-Gauld, 2005), and the process of adapting to higher education (Christie, Tett, Cree, Hounsell, & McCune, 2008). Qualitative approaches can help to expand upon Study Two's quantitative findings, and provide further evidence about students' mental health needs. They can explore salient issues relating to students' understanding of depression, and identify attitudes and beliefs about help sources and treatments. These findings can then be used to identify which areas of mental health literacy (MHL) students may be less knowledgeable about, and be targeted in the developed intervention.

4.2 Aims

This study aimed to investigate:

- Undergraduate students' experiences of changes and/or difficulties in their emotional and mental well-being since starting university
- Factors that students felt impacted upon their mental well-being at university
- Students' experiences of, and perceptions and attitudes relating to, mental health help-seeking

4.3 Methodology

4.3.1 Design

A qualitative approach was taken to investigate these aims, as it was important to listen to the 'voiced' experiences of students, that would not be provided through a quantitative-only approach. Participants' welfare and comfort in discussing their mental health was paramount, and it was felt they would be most comfortable in doing this through a one-to-one interview. Interviews are flexible and useful for exploring sensitive topics (Fylan, 2005), and also allow for sufficient debriefing.

4.3.2 Ethical considerations

This study was reviewed and approved by the University of Nottingham Medical School ethics committee (ref: F12012012, Appendix 7). Several protocols were developed for potential scenarios that could occur during the interview (e.g. if participant became upset). Advice was sought from a suicide prevention charity about how to respond to participants who expressed suicidal ideation, and EBD received training in Mental Health First Aid prior to recruitment. In the interviews, EBD was attentive to participants' body language, asked periodically how the participant was feeling, and if they wanted to continue participating. Participants' current emotional state was explored in debriefing. "Emotional health"/"emotional difficulties" were used due to concerns raised by the ethics committee about using mental health-related terms. Such

terms (e.g. “depression”, “anxiety”, “mental health”) were only used by EBD if the participant mentioned them first. Face-to-face debriefing was provided, and participants were provided with written information about relevant services. Specific services were stated by EBD if participants had mentioned them during the interview, or felt they would benefit from the information.

Participants were informed that all disclosed information was confidential, but that if they disclosed information which suggested they were at risk of harm to themselves or to others, that confidentiality would be broken and EBD would liaise with her supervisors to organise a response. Two pre-interview screening measures of anxiety (GAD-7) and depression (PHQ-9) provided an idea about participants’ current mental state (see Chapter Three, section 3.3.4, for more information). Post-interview, participants who endorsed the PHQ-9’s final item (assessing suicidal ideation/self-harm) were asked how they were currently feeling in relation to this question. If not discussed in the interview, participants with a mental health need were asked if they were currently receiving help or support.

4.3.3 Recruitment

Recruitment occurred between January and May 2013 through the following ways:

- After the previous online study (Study Two), participants were informed about the opportunity to participate in a follow-up interview about their emotional well-being. Interested

students (n=57) submitted their email address into a separate online survey. All were sent an invitation email and information sheet (Appendix 11) outlining the study. An interview was arranged if they assented to participation.

- Advertisement posters were placed around the university, and a text-based advertisement was posted on university intranet (Appendices 12-13). These advertised the study as involving “talking about your emotional well-being whilst at university and what support you feel would be helpful for students who experience emotional difficulties at university”.
- Snowballing was used at the end of interviews.

The study was advertised with an incentive (£15 Amazon e-voucher upon study participation). Recruitment (Figure 11) was undertaken until it was felt theme saturation had occurred.

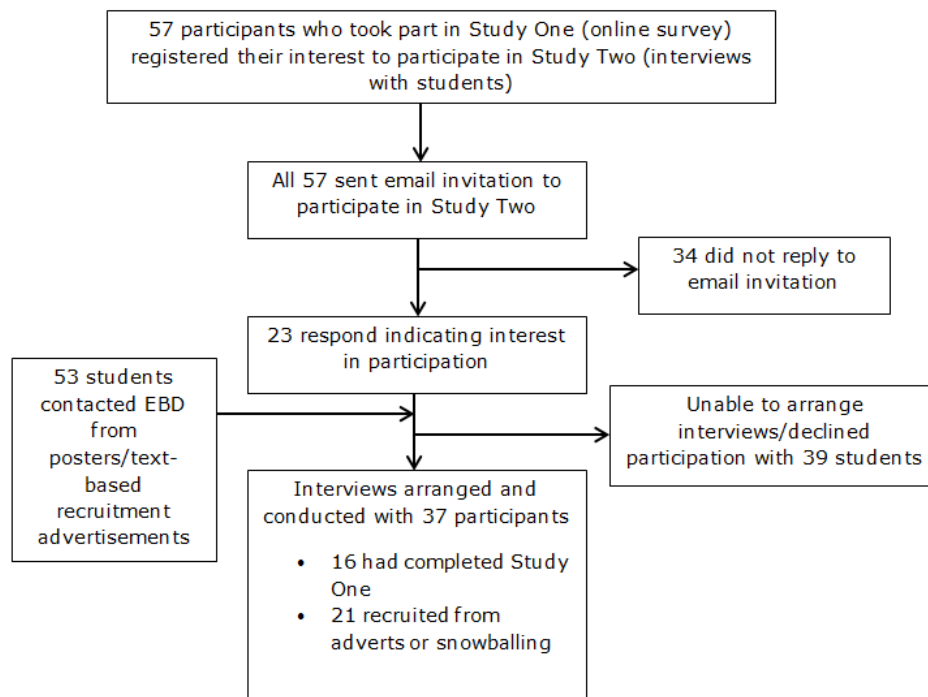


Figure 11. Flow chart of study recruitment.

4.3.4 Participants

The goal was to sample students from various courses and with a range of experiences relating to emotional difficulties at university. Participants had to be aged ≥ 18 years, and be a registered undergraduate student at the University of Nottingham (UoN) or Nottingham Trent University (NTU). Thirty-nine students who contacted EBD were not interviewed due to: no further contact; not meeting inclusion criteria; withdrawal as they felt uncomfortable discussing topic with unfamiliar person; and difficulties in attending interview location. Regardless of their non-participation, each student was emailed a list of available services/resources. Towards the end of the study, a recruitment drive for male participants was

conducted to aid the sample's gender balance and representativeness.

Thirty-seven students consented to participate and were interviewed (Table 10). Females were over-sampled, and nearly all participants were British. Ages ranged from 18 to 24 years (median 20 years) and the majority (N=15) were studying Arts and Humanities degrees. Some participants stated they had withdrawn or changed from the degree they initially enrolled on when they started university.

4.3.5 Measures

Prior to interview, participants completed a brief (5-10 minutes) online survey, which collected demographic information and assessed current anxiety and depression symptomology through the GAD-7 (Spitzer, et al., 2006) and PHQ-9 (Kroenke, et al., 2001) (see Chapter Three, section 3.3.4, for detailed information).

Table 10. Demographic composition of the sample.

Demographic characteristic	N
Gender	
Male	13
Female	24
Age (years)	
18	2
19	10
20	9
21	8
22	2
23+	6
University of study	
University of Nottingham	30
Nottingham Trent University	7
Origin	
Home (British)	34
International	3
Year of study	
First year	13
Second year	14
Third year	7
Fourth year and beyond	3
Faculty of study	
Arts & Humanities	15
Medicine & Health Sciences	6
Social Sciences	7
Science & Engineering	9
Current living arrangements	
Halls of residence or university-owned house	12
Privately-rented accommodation	24
Hospital accommodation	1
Parents' education background	
Neither parent went to university	16
One parent attended university	7
Both parents attended university	11
Unsure	3

4.3.6 Semi-structured interviews

After reviewing previous qualitative research that focused on young people's mental health (Chew-Graham, et al., 2003; Gulliver, Griffiths, & Christensen, 2012), an interview schedule was developed (Appendix 14). This schedule had several exploratory topics: participants' experiences of entering university; whether they felt university had affected their mental well-being; their experience of mental health and emotional difficulties; their coping and self-management of difficulties; and their use and/or perceptions of help-sources. Prompts were used to further explore participants' answers. If participants could not describe anything relating to their own mental well-being, they were asked if they knew of anyone who had experienced similar difficulties (e.g. friends). Interviews ranged from 17.05 to 81.54 minutes (median 37.35 minutes). No repeat interviews were performed, and no notes were made by EBD during the interviews.

4.3.7 Procedure

A suitable time and date for the interview was arranged with participants, and they were given the options of two interview locations, and asked whether they needed any support to access it. Prior to interview, participants completed the online survey and received a reminder email. The interviews were conducted within private rooms, with furniture arranged to provide appropriate eye-contact and distance. Informed consent procedures were given

verbally by EBD: participants had the opportunity to ask questions prior to consenting, and consent was asserted through signing a consent form. The interview then commenced and was recorded via Dictaphone.

To confirm participants' information from the pre-interview survey, EBD asked participants about their living arrangements, their course and their progression into university life. If participants had not described any emotional difficulties within these questions, they were subsequently asked if they had experienced any difficulties, and asked to describe these and their personal impact. Participants were asked whether they had disclosed their feelings to others, and their coping and management of their difficulties. The final part of the interview explored students' help-seeking for their difficulties, including their experiences of professional help seeking (e.g. counselling services, GPs). Participants who did not describe personal experiences of difficulties were asked about their transition into university, issues with their living arrangements and course, and presented with a hypothetical scenario about whether they would seek help if they were feeling emotional difficulties. Once EBD had finished following the interview schedule, participants were asked if they had anything additional to add. Audio recording stopped after this.

Participants were verbally debriefed, given the opportunity to ask EBD any questions, and given a written debriefing form. EBD explained the help sources listed on the debriefing form, and

signposted specific resources if it was raised in the interview. Participants could withdraw their data until two months post-interview. Participants received a £15 Amazon e-voucher as reimbursement, were asked if they wanted a copy of their transcribed interview, and were assisted in leaving the location. Interviews were transcribed verbatim by EBD; participants and anyone they mentioned by name in the interview were anonymised, and participants were not asked to review their transcribed interviews.

4.3.8 Analysis

Descriptive data from the pre-interview survey are presented under 'Findings and Discussion' (section 4.5) to show the sample's composition. Qualitative analysis was undertaken through thematic analysis; this involves the identification of "themes and patterns of meaning across a dataset in relation to a research question" (Braun & Clarke, 2013). Thematic analysis is applied widely in psychology and is flexible (Braun & Clarke, 2013). Three *a priori* overarching categories were used to identify data which related solely to the study's aims: 1) participants' experiences of mental health difficulties/emotional difficulties; 2) their experiences of help-seeking for mental health/emotional health; 3) self-management and coping strategies to help their mental health and mental well-being. An inductive analysis approach was used to code relevant data and identify emergent themes and subthemes. Inductive

thematic analysis is conducted 'bottom-up' and is not influenced by existing theory or theoretical concepts (Braun & Clarke, 2013).

These data were iteratively analysed and underwent initial coding, wherein segments of data were labelled with codes. The coded data were searched to identify similar codes. Subsequently, themes and subthemes emerged inductively from analysis. CG reviewed the themes/subthemes to explore their coding and definitions. Template analysis (Crabtree & Miller, 1998; King, 2008) was used to aid thematic analysis: this is a technique used to aid the construction and layout of codes and themes, and often involves *a priori* categories to focus on data relevant to the research aims (King, 2008). Microsoft Excel was used to categorise data and catalogue the emergent themes and subthemes.

Once themes and subthemes were established, a codebook was developed to describe each one (Appendix 15). For each theme, five elements are described, as outlined by Boyatzis (1998):

1. A meaningful theme label
2. Definition of the theme
3. Description of how to identify the theme
4. Description of exclusion and/or qualifications to the theme
5. Positive and negative examples of the theme

Once this codebook was developed and EBD was satisfied with the themes/subthemes, a random number generator was used to

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randomly extract thirty random quotes (six from each of the five themes) from each of the workbooks used for categorising the themes.

In the present study, inter-rater reliability refers to the degree in which two (or more) individuals agree on the codes assigned to the qualitative data (Marques & McCall, 2005). The thirty quotes and the codebook were given to an academic (CB), who had experience of conducting and analysing qualitative research. CB was asked to read the quotes and assign a theme/subtheme to them based on the description given in the codebook. Inter-rater reliability was measured by comparing EBD and CB's assigned thematic codes for each of the thirty randomly-chosen quotes. Endorsement of the same thematic code for the quote indicated agreement. Overall there was agreement for 73% (22/30) of the coded quotes. Marques & McCall (2005) suggest agreement of 66.7% is an "acceptable" level of inter-rater reliability. Subsequently, all coded quotes were reviewed by EBD, with some adjustments made to the data and the codebook to reflect this inter-rater coding.

4.3.9 Reflexive statement

According to Demery et al. (2012), "the role and positioning of the researcher is considered an integral part of the research process". Guidelines for reporting qualitative research suggest reporting the characteristics of the lead researcher, as this may potentially influence analysis and findings (Tong, Sainsbury, & Craig, 2007).

EBD is a young, female postgraduate student who has been through undergraduate education. She has had some previous personal experiences of mental health difficulties, both before and during her time at university, and has experience of seeking professional help for these. She did not describe her experiences to participants prior to interview, but if deemed necessary she did describe them during debriefing. She did empathise with students describing similar personal experiences and associated some of their experiences with her own. However, she was aware of the need not to bias interpretation of participants' experiences through specific prompting of questions. EBD has received training in MHFA and counselling skills, and in the interviews she used appropriate language and active listening, and paid attention to participant's body language and tone of voice. One participant was known to EBD through a student society. EBD's second supervisor (RM) is a consultant psychiatrist, who has supported patients who are registered Nottingham-based university students.

4.4 Mental health of the sample

In the interviews, participants reported a range of current depressive and anxiety symptomology, as well as previous experiences of mental health difficulties. Table 11 displays participants' levels of anxiety and depressive symptomology. The majority of participants had none or mild symptomology. Scores from 1 to 19 were observed on the GAD-7, and 2 to 21 on the PHQ-

Table 11. The sample's pre-interview screens for anxiety and depressive symptomology.

Measure	Threshold	Participant number
GAD-7	None (N=11)	2*, 3, 5, 9*, 11, 12, 18, 19, 20, 25, 29, 34
	Mild (N=15)	1*, 4, 6, 7, 13*, 16, 17, 22, 24*, 26, 31*, 32, 33, 35, 36, 37
	Moderate (N=8)	8*, 10*, 15, 23, 27, 28
	Severe (N=3)	14*, 21*, 30*
PHQ-9	None (N=10)	3, 5, 9*, 11, 12, 18, 19, 20, 22, 29
	Mild (N=10)	1*, 4, 13*, 17, 24*, 25, 27, 34, 36, 37
	Moderate (N=11)	2*, 6, 7, 10*, 15, 23, 26, 31*, 32, 33, 35
	Moderate-to-severe (N=4)	8*, 16, 21*, 28
	Severe (N=2)	14*, 30*

NB: Numbers marked with an asterisk (*) indicates participants who reported a current or past diagnosis of a mental health problem.

9; there was at least one participant representing the lowest and highest severity thresholds on each measure. Eight participants did not screen for any threshold on either measure; five screened for mild or above symptomology on one measure; and 24 screened for mild symptomology or above on both measures. Eleven participants disclosed personal experience of a mental health problem, including having a current or past diagnosis, or being in the process of receiving a diagnosis, or receiving relevant treatment. These participants were either waiting a referral/diagnosis, had past experience of, or were currently experiencing, generalised anxiety disorder, depression, bipolar disorder, anorexia nervosa, or PTSD.

These eleven participants are marked with an asterisk (*) on Table 11. Six participants also disclosed other health issues, including dyslexia, epilepsy, hearing impairments and asthma.

4.5 Findings and Discussion

Four overarching themes and twenty subthemes were identified through thematic analysis (see Table 12). Each theme/subtheme is described individually below, alongside illustrative participant quotes. Pseudonyms are used to mask participants' real names, and other potentially identifiable information was removed from quotes. The corresponding participant numbers and their PHQ-9 and GAD-7 scores from Table 11, their year and subject of study are presented with each illustrative quote, alongside additional information (e.g. current/past diagnosis of a mental disorder) where it is felt necessary to help comprehension of the illustrative quote or theme/sub-theme. Within quotes, '[...]' means some transcription was removed to aid comprehension, or was indicative of a different subtheme. Discussion of the findings is incorporated into each presenting theme.

Themes	Subthemes (if present)
Students understanding of their poor mental well-being	<i>Is distress 'normal' or do I need help?</i>
	<i>Questioning the helpfulness of receiving a diagnosis</i>
	<i>How students' degrees helped their understanding of mental health</i>
	<i>Students' identification of links between mental well-being and physical health</i>
How the nature of student life negatively impacts upon well-being	<i>Academic demands and living arrangements</i>
	<i>Student's transition into university life</i>
	<i>The role of routines at university</i>
	<i>Isolation and loneliness</i>
	<i>Putting pressure on self to highly achieve</i>
Students' perceived concerns and challenges to seeking help	<i>GPs not perceived as able to give help for mental health issues</i>
	<i>Students' concerns about psychiatric medication</i>
	<i>How effective is university counselling?</i>
	<i>Tutors are for academic problems only</i>
	<i>Praise for mental health advisors and disability support services</i>
	<i>Challenges students face in disclosing to others</i>
Students' coping and management of mental well-being	<i>Student's use of proactive self-help strategies</i>
	<i>The value of social support</i>
	<i>Use of medication for mental well-being</i>

Table 12. Themes and subthemes identified from the interviews.

4.5.1 Theme 1: Students' understanding of their poor mental well-being

This theme captured how being at university is an emotional period for young people, and how students made sense of their mental well-being during this time. Four subthemes emerged from this overarching theme.

4.5.1.1 *Is distress 'normal' or do I need help?*

Some participants described how they or others perceived experiencing mental distress as being a normal state of well-being. The long-term presence and slow onset of symptoms, the university environment, and rationalising symptoms as not being serious, were described as contributors to the 'normalisation' of distress. Likewise, four participants expressed difficulties interpreting the importance of symptoms of mental distress, and the process of figuring out whether these symptoms represented a normal emotional state, or whether intervention was needed:

"There have been some points where I've been, like, absolutely like sobbing in tears on the sofa cos I'm so tired and stressed [...] I don't know whether or not that's normal, whether a lot of people experience that as well, but I'd assume it was fairly normal [...] it's just around exams [...] or if it's got to the end of term and [I'm] getting tired" (Amy, P28 [GAD 12, PHQ 15], 3rd Yr Law student, no diagnosis)

This appears to resonate with a previous qualitative study with young adults experiencing elevated mental distress (Biddle, et al., 2007): young people may use their environment to help interpret and appraise whether their feelings indicate 'normal' or 'real' distress. Being within the university environment, and surrounded by similar peers, may influence students' beliefs about what a 'normal' and 'real' mental health problem is. Young people can find it difficult to assess the significance of mental distress given the lack of overt markers. One participant in the present study mentioned how a 'checklist' would help her appraise the meaning of her feelings. This process of identifying and appraising symptoms is an aspect of the Cycle of Avoidance model, and instigates the help-seeking process (Biddle, et al., 2007). Czyz et al. (2013) comment that interventions could improve students' abilities to recognise problems and skills to reappraise distress, in order to alter their risk perception of susceptibility to a mental health problem.

4.5.1.2 Questioning the helpfulness of receiving a diagnosis

Six participants described their experiences and thoughts about receiving or being in the process of attaining a diagnosis of a mental disorder, including bipolar disorder, depressive and/or anxiety disorders. Two students described how the names of the conditions represent a wide range of symptom presentations, which made them question the usefulness of 'labels':

"To me, depression's just a label, it doesn't really mean much [...] it's a very broad and vague term [...] I'm still just very unsure as to what these conditions actually are [...] because I've met people who've been diagnosed with the same thing but they experience completely different symptoms [...] so I don't take them [diagnoses] too seriously" (Luke, P21 [GAD 19, PHQ 16], 4th Yr German student, diagnosis of depression and anxiety)

Concerns about being stigmatised or experiencing discrimination due to having a diagnosis was also evident in some participants, both with and without experience of mental health difficulties, particularly in how it could affect future employment opportunities. In her experience of receiving a diagnosis of bipolar disorder, Beth (P2 [GAD 4, PHQ 11] 3rd Yr English & Creative Writing student) described how this had both positive and negative implications for herself, and for others around her:

"It [diagnosis] was a relief because I knew there was something wrong [...] I'd be able to say 'look there is something wrong' to my family, to the people that it was affecting [...] I've been accused of trying to seek attention, or being selfish [...] you get a lot of 'oh just get a grip', like 'why can't you just deal with it, deal with life?' [...] I was able to say 'look I can't do these things that you're trying to ask me to do and this is why' [...] on the other hand, there is a stigma attached to it [...] it's not something that I really wanted on my medical records. In terms of trying to get a job when I've finished

uni – I'm not sure how if they do want to look into my past history, not sure how that would affect their decision to employ me"

Similarly Andy (P8 [GAD 13, PHQ 16], 1st Yr Print Journalism student, in-process diagnosis of depression) described how not having a formal diagnosis caused him some concerns about disclosure:

"On medical forms, I'm never sure what to say, so I just put I get depressed sometimes – people think 'but so does everyone!' [...] I'd like to [be] diagnosed with something cos I'd feel like there would be a name for it and, there'd be a focal point [...] if that was the diagnosis, then this is what we can do to help it, I suppose, to treat the symptoms"

The uncertainty about 'labels' due to the lack of commonality of symptoms is understandable given the varied presentation of mental health problems. Regardless of age, receiving a diagnosis is associated with many positive and negative emotive reactions. The reactions described by these six students reflect the complexity of receiving and living with a diagnosed mental disorder. This complexity, and concerns relating to labelling and the diagnoses' impact upon future opportunities, have previously been reported in a small American study involving five students with a diagnosis of anxiety, depression or bipolar disorder (Stein, 2012). These American students felt positive about their diagnosis, as it explained

what they were experiencing, but also felt uncertainty due to the diagnoses' negative implications.

4.5.1.3 *How students' degrees helped their understanding of mental health*

Certain degree courses may entail curricula-based contact with topics related to mental health. Five participants studying medicine, sociology, psychology and law, mentioned such contact within their degree. It appeared that their degree's content may have helped their understanding and appraisal of symptoms, management of their mental health, or prompted help seeking:

"I started a Psych placement, and we were having all these lectures about how to tell when somebody's depressed, and it was just like 'yes that's me' [...] and maybe I should actually do something about it before I start trying to treat people who are depressed, if I can't admit to myself that I'm depressed" (Charlotte, P13 [GAD 5, PHQ 5], 4th Yr Medicine student, past diagnosis of depression)

It is logical for some students to have better MHL given their degree of study, and these students may be better equipped to manage their mental health. Likewise, they may feel more able to disclose to academic staff in these disciplines, given their contact with mental health topics. This is important as students in other disciplines may have less understanding of mental distress, and so may benefit from interventions to improve their MHL.

4.5.1.4 *Students' identification of links between mental well-being and physical health*

Nine participants reflected on the links between how mental health affected their physical health, and vice versa. Participants had good understanding of the connection in how poor mental well-being exacerbated physical health difficulties (e.g. asthma), or affected their immune system and subsequently made them vulnerable to experiencing physical health problems:

"At the same time [during episode of depressed mood], I got quite ill and it was just like a cold, but carried on for like four or five months, and so was just was tired all the time [...] my head was just fuzzy, like I couldn't really think about anything or concentrate, and I think like part of it was [...] the emotional stress making me ill rather than there actually being anything wrong with me, cos I went for blood tests and went to the doctor's a few times and nothing ever came up" (Molly, P26 [GAD 8, PHQ 13], 3rd Yr History student, no diagnosis)

In terms of maintaining positive general well-being, Adam (P35 [GAD 9, PHQ 14], 1st Yr German and Russian student, no diagnosis) commented about how engaging in positive health behaviours and lifestyle management affected his mental-well-being at university:

"The thing I found previously about [...] general well-being and happiness is getting good sleep, drinking lots of water and eating well and that will make a difference [...] if you eat badly, don't get

much sleep, you're going to be grumpy and miserable all day, and it's just really simple but it does actually tend to help me as someone who's generally pessimistic [...] like if I had loads of fruit and brown rice [...] like little red meat and like good carbs rather than sort of white bread or you know just simple things like that, you're full of energy and you know when you're full of energy you do tend to be happier and more active about things"

Symptoms of impaired physical functioning often emerge in students when they find it difficult to cope with stress (Steinhardt & Dolbier, 2008). Understanding the links between their physical and mental health is somewhat expected, as students are an educated group of individuals.

4.5.2 Theme 2: How the nature of student life impacts upon mental well-being

Many students described certain aspects of being in higher education that placed demands upon, or impacted negatively upon, their mental well-being. All participants were initially asked about their progression into university life. The majority (N=18) reported equivocal experiences; they neither felt overtly negative or positive about their progression, but often described dealing with "ups and downs" of university life, such as feeling excited about university and coping with new changes. Eleven participants felt their progression had been difficult and had experienced many stressors, such as homesickness, prolonged unsettledness, 'shock' of the new

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environment, not feeling prepared for university, and coping with the typical student lifestyle. The three participants with the highest screens for depressive and anxiety symptoms, and who had a diagnosed mental disorder prior to university, all felt their transition had been negative. Finally, eight students felt their transition had been positive and felt it had gone well or smoothly, despite the new experiences and changes. Five subthemes emerged in this overarching theme, which represented specific factors affecting students' well-being: academic demands and living arrangements; transition into university life; routines at university; loneliness and isolation; and putting pressure on self to highly achieve.

4.5.2.1 Academic demands and living arrangements impact upon students' mental well-being

Over two-thirds (n=26) mentioned how specific aspects of their academic course and/or living arrangements affected their mental well-being. Many academic factors were identified by students which affected their mental and physical well-being, including the transitions and changes in the social, educational and academic environments, and being able to deal and cope with workload and academic assessments:

"[in first year] I lost about two and a half stone in weight because of my summer exams [...] that was hugely stressful so I just didn't eat at all, that was the way I got through it, but [...] second and third year I've comfort eaten, so that's the way I've dealt with it as it's

gone along” (Amy, P28 [GAD 12, PHQ 15], 3rd Yr Law student, no diagnosis)

The nature of participants’ specific degree of study may also place unique demands upon students’ well-being. This included minimal contact time allowing for self-isolation, and the creativity involved in the degree:

“Creative writing is the majority of the degree and it’s quite an isolated subject really because my dissertation is a creative writing story, so a lot of my work is spent inside my own head [...] that can be quite difficult” (Beth, P2 [GAD 4, PHQ 11], 3rd Yr English & Creative Writing student, diagnosis of bipolar disorder

The course’s content could mean that students are faced with situations that are highly taxing upon their emotions or affect their ability to cope. Similarly the type of degree being studied may also affect students’ willingness to disclose and/or seek help for their mental health. Charlotte (P13 [GAD 5, PHQ 5], 4th Yr Medicine student, past diagnosis of depression) described how dealing with placements is a particular factor for medical students:

“With some of the stuff that we see on placements [...] it’s just kind of something that you’re supposed to ‘oh, man up, get on with it, it’s something that happens’ [...] whereas actually some things do kind of affect you and you do need somebody to talk to [...] it’s plucking up that courage and actually going and doing it, and I think a lot of med students don’t because they don’t want it to be put on

their records [...] I think the med school is quite a separate entity to yourselves [other schools] and [...] they seem quite harsh"

Twelve students mentioned that physical and social factors associated with accommodation and living arrangements greatly affected their mental well-being. Living in close proximity to other students, who participants may be unfamiliar with, or not be similar to their usual peers, were reasons for inducing stress:

"There have been times where I've been fed up [...] just didn't want to be at uni [...] I think I put that down to [...] some of the people that I lived with, I found it difficult to be around [some students] purely because they, they were so very different to the people I surround myself with back at home" (Scott, P3 [GAD 3, PHQ 4], 2nd Yr English student, no diagnosis)

Peer pressure was described by two students; they felt they had to fit in with other students and activities, especially within halls of residence. Both conforming and non-conforming to perceived peer pressure was described as a source of anxiety:

"I felt like people were judging me cos I wasn't going out and stuff [...] so [I] made an effort to try and kind of hide that [...] and then felt bad about myself [...] just because you feel it's such a new environment, you just don't know how people are going to react at all, so you just want to try and please everybody [...] the effort of doing that everyday all day [...] takes its toll eventually" (Amanda, P25 [GAD 4, PHQ 6], 2nd Yr Natural Sciences student, no diagnosis)

Naomi (P14 [GAD 18, PHQ 21], 2nd Yr Sociology student, diagnosis of depression and anxiety) found her halls environment permitted her to withdraw and isolate herself, without others noticing:

"I wouldn't leave my room [in halls] at all for weeks on end because I'd buy enough food in for a month, and I would just sit in my room and not go out because I didn't see the point [...] I had my own like little kitchen and my own bathroom in my room, so I didn't actually have to leave my room for anything. I didn't actually know any of the names of the people on my corridor, so I could get away with it"

Adam (P35 [GAD 9, PHQ 14], 1st Yr German and Russian student, no diagnosis) described how he felt the lifestyle within halls challenged his ability to live healthily, and subsequently impacted upon his mental well-being:

"I've got a horrible mattress, I've been kept awake by other people in the hall, or because I'm on the ground floor I'm not allowed to have my window open at night and I'm asthmatic so I always sleep with a window open [...] I have to keep my window locked cos they get break-ins [...] I don't get brilliantly nutritious food in halls, only based on the cost per meal because the budget they're working with [...] it's kind of easy to just slump into a cycle of poor sleep, poor food, which just makes you [...] not really depressed but it just makes you constantly feel like tired and like blue about things"

Two students described contrasting experiences of how living in halls affected their mental well-being and related eating habits.

Andy (P8 [GAD 13, PHQ 16], 1st Yr Print Journalism student, in-
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process diagnosis of depression) described the difficulties he experienced with other student residents meant he kept his food in his own room, which meant easy access for over-eating when experiencing an episode of depression. Additionally Sara (P9 [GAD 5, PHQ 4], 4th Yr Medicine student, past diagnosis of anorexia), who recovered from anorexia prior to university, mentioned the challenges of living in catered halls of residence:

"[halls are] a strange environment to be in [...] being around that many people, everyone's very cliquey [...] I think especially with eating [...] you're all in a big room together eating, which I found really stressful"

Given that halls of residences often accommodate hundreds of students, many will have to cope with living in close quarters with others. Sleeping difficulties, due to noise disturbances or the normality of irregular sleeping times, were reported and either led to development or exacerbation of current sleeping difficulties:

"They [flatmates] were like [...] nocturnal [...] just every night between two and four, they'd come back from a night out and just be noisy for like four hours [...] it was every night, like there was never a break [...] I didn't sleep for like a whole year" (Zoe, P5 [GAD 4, PHQ 2], 2nd Yr English & Linguistics student, no diagnosis)

The first year of study, when students typically live in halls of residence, appeared to be when the living arrangements impacted most upon their mental well-being. Students appeared happier

about their living arrangements in their subsequent years, wherein they commonly lived in local housing, usually with other students of their own choice, and so lived in a 'calmer' environment. Conversely, the instability of accommodation and the financial needs required to support being at university, were described by two students as being significant factors impacting upon their mental health:

"[living in halls] was just an absolutely nightmare, it drove me to [...] wanting to rip my hair out in my room because of the noise, or because you're living with absolute slobbs and obviously with having a bit of an eating problem anyway, I wasn't eating some days because the kitchen was too disgusting to go in there. Obviously that has a huge impact on your energy levels and your emotional well-being [...] I'm really not surprised that I dropped out of that [initial] degree, not having a secure home to live in, so I think that's been the biggest difference there, I've [now] got that stability in my life" (Ruby, P30 [GAD 16, PHQ 20], 2nd Yr Art History student, diagnosis of depression, anxiety & PTSD)

Management of social conflict, stress, and perceived isolation arising from living in halls of residence, echoes previous findings (Markoulakis & Kirsh, 2013; Wilcox, et al., 2005). In a British student sample, difficulties with accommodation and making friendships were highly endorsed reasons influencing students' decisions to withdraw from university (Wilcox, et al., 2005). Within this, students also described great anxiety and pressure to make

friends upon entering university, and difficulties in their compatibility with other students in their halls of residence. Living with other students, and the prevalence of mental distress, means it is likely that students will come into close contact with others who are experiencing a significant mental health problem. Ben (P4 [GAD 7, PHQ 6], 3rd Yr Medicine student, no diagnosis) described his experience wherein he and his housemates found it difficult to respond to their housemate who had schizophrenia:

"it was a really difficult [...] three month period when he was living with us, partly cos [...] his mental health team at home and his mental health team here [in Nottingham] just kind of pushed him from pillar to post, no one wanted to really take responsibility for him [...] the team in his home city tended to think he'd be better off staying here and then we [housemates] were [...] going 'we can't look after him, he's not taking his medication', like we all have degrees to do [...] we had a crisis point [...] early on when he never really told us much about it [...] he just sat in the kitchen playing with a knife, really upset, and we didn't even know what to do. It's like, do we call 999?"

While it is important to consider the mental health of those students with mental health difficulties, it is also necessary to consider how to help students who may be living with, or supporting another student, experiencing mental health issues.

4.5.2.2 *Students' transition into university life*

Many students spoke about familiar-to-unfamiliar transitions they encountered upon entering university life, such as moving from home into a new living environment, the change from further to higher education, and the loss of established social networks and making new relationships. These transitions were perceived as factors potentially impacting upon their mental well-being:

"I just felt completely out of my depth here [at uni] [...] I was quite well known within the [secondary] school as a house captain [...] and like knew all the members of staff [...] so then to go from somewhere where I was really, really well known to somewhere where literally nobody knew me was really really scary [...] there were just so many new people around and all of them like trying desperately hard to make friends [...] it was really overwhelming"
(Amanda, P25 [GAD 4, PHQ 6], 2nd Yr Natural Sciences student, no diagnosis)

Living away from family and coping with reduced family contact were particular challenges experienced by some students, which may have been mediated by feelings of lack or loss of control whilst being at university:

"when you're at home, you see them [grandparents] quite a lot [...] then obviously you're back at university for twelve whole weeks without seeing them [...] that always really makes me quite anxious and you know I do sort of dwell on that a fair amount [...] before I come back [to uni] I don't know whether it's going to be the last
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time I do [...] that's always quite worrying when I have to come back to uni for ten weeks of [...] and I'm sort out of the frame, I really do feel like powerless to it all, like really out of control, I hate that" (Adam, P35 [GAD 9, PHQ 14], 1st Yr German and Russian student, no diagnosis)

For those with a diagnosis of a mental disorder, or who had previously experienced mental health difficulties, issues managing transitions and academic stressors may have been more pronounced or challenging, or may have contributed towards a re-emergence of depression:

"In every seminar, everybody had to answer a question and in one of the seminars there was a ten minute presentation every week from everybody [...] I immediately just freaked out and stopped going [...] I didn't want to feel pressured or put on the spot because if I'm called on in class, I sometimes just have a panic attack and it's just so humiliating" (Ruby, P30 [GAD 16, PHQ 20], 2nd Yr Art History student, diagnosis of depression, anxiety & PTSD)

Entering and adapting to higher education can be an emotionally challenging experience for some. Some students may be more vulnerable to developing mental health difficulties and academic impairments during this time (Christie, et al., 2008; Markoulakis & Kirsh, 2013), and for students with mental disorders, this transition can cause significant disruption in adapting to university (Demery, et al., 2012). Helping to prepare students for the non-academic

aspects of university may be an avenue to explore. The use of peer support through “buddy” schemes, wherein new students are paired with current students, may help adjustment to university life; this can be particularly helpful for international students who face additional transitions into higher education (Bradley, 2000; Pain, 2011; Weiner & Wiener, 1996).

Some participants described how coping with events at home caused worry. Likewise, first year students’ living arrangements suggested some lack of control in coping with their environment, which potentially affected their emotional well-being. Lower perceived sense of control (SoC) was associated with increased likelihood of elevated depressive symptomology in a British student sample (Ibrahim, Kelly, & Glazebrook, 2013). In the timeline of studenthood, first year may be a crucial stage of development of SoC and coping with new challenges (e.g. living arrangements). This may be an important period for intervention to help students’ resilience in adapting to these new experiences, and to aid prevention and further development of a mental health problem.

4.5.2.3 *The role of routines at university*

Another transitional issue identified by five students related to routines at university. Students’ change from a set structured life prior to university, to being more autonomous and in control of their time, were perceived as issues affecting their well-being (e.g. sleeping habits) and ability to self-motivate. Similarly, being independent meant that there was no one to prompt routines:

"[first year] was terrible and I would stay up til [...] at least two probably, sometimes 'til four, and it just became sort of my normal sleeping habits because I think there's not that much scheduled hours for Music [...] last year I might have had eight [scheduled hours] and now I've got something like six or seven [...] my sleeping habits weren't that good [...] obviously when you're at home if you're still up at two in the morning your parents are going 'oh what are you doing?'" (Rosie, P23 [GAD 11, PHQ 11], 2nd Yr Music student, no diagnosis)

4.5.2.4 Isolation and loneliness

Nine students described how they felt feelings of perceived isolation or loneliness whilst at university. Being in halls of residence was particularly perceived as an issue influencing this perception. Students were concerned that if they were experiencing personal issues or feeling distress, then they would not be able to confide in students within their halls, as they were still unfamiliar with each other and had not established any trusting friendships:

"I felt quite lonely in the flat [...] I thought I've got nobody here like in this block [of halls], I know some names but really who are my actual friends" (Adele, P20 [GAD 2, PHQ 2], 1st Yr Spanish & Chinese Studies student, no diagnosis)

Prior to university, some students expected that at university they would make new friends soon after arriving. When these expectations were not met, perceived isolation was experienced.

Furthermore, this perceived isolation appeared to be unnoticed by others due to being in an environment wherein many students were living, meaning that it was difficult to 'stand out' to others:

"Sometimes I feel like I'm by myself, but I'm surrounded by people [...] especially when I'm going to sleep [...] there's so many people around me but there's not really anybody there, and I feel sometimes like if I just disappeared, nobody would really notice sometimes" (Isobel, P22 [GAD 5, PHQ 4], 1st Yr Law student, no diagnosis)

One student described how she felt perceived isolation arising from masking her feelings from others when experiencing an episode of low mood. Finally, two students also described that, as they felt different to the other students in their corridor/hall, they felt isolated and may have made it difficult to live with them:

"I didn't go out as much as they did, like I felt segregated and different and weird [...] I had a very different sort of lifestyle to them [...] I like cooking and I like reading the paper at the weekend and stuff, but they just were so opposite to me [...] it was just really difficult to live with them really" (Zoe, P5 [GAD 4, PHQ 2], 2nd Yr English & Linguistics student, no diagnosis)

4.5.2.5 Putting pressure on self to highly achieve

The final subtheme related to how ten students placed pressure on themselves to achieve highly in their academic work and performance, or felt pressure from others. While this may not be a

direct consequence of student life itself, the university environment appeared to allow students to place themselves under considerable pressure to achieve their desired results. Although this pressure helped students achieve academically, some also described it as adversely affecting their way of thinking, and potentially affecting their mental well-being. Two also described how parental expectations and their personality type affected the pressure they placed upon themselves to achieve:

"I always try and push myself really hard [...] I have very high expectations of myself and for other people [...] I put a lot of pressure on myself to do well and sometimes it [...] wasn't beneficial to think like that" (Beth, P2 [GAD 4, PHQ 11], 3rd Yr English & Creative Writing student, diagnosis of bipolar disorder)

Lawrence (P32 [GAD 9, PHQ 11], 2nd Yr Economics student, no diagnosis), an international student from China, felt the change in assessment system and being surrounded by other high achievers made it difficult for him to achieve highly. Furthermore, Naomi (P14 [GAD 18, PHQ 21], 2nd Yr Sociology student, diagnosis of depression and anxiety) felt that students' strive for perfection to achieve high grades may go unnoticed by academic staff:

"My friends [...] get themselves into such states trying to get a First [degree classification], which is what I used to be like [...] I think departments don't recognise that as much as they should, they just think the student wants to try hard [...] I guess there's a fine line

between wanting to try hard and sleepless nights and getting yourself into a state because you feel you need to get a First”

These experiences appear to align with self-orientated perfectionism, wherein individuals have overly-high personal standards to achieve, and socially-prescribed perfectionism in meeting the high standards imposed by others (Mills & Blankstein, 2000). Perfectionism is a multifaceted personality trait which often presents maladaptively, and is characterised by unrealistic standards of achievement, harsh self-criticism, over-emphasis of failures, and ‘all-or-nothing’ thinking (Arpin-Cribbie, et al., 2012). Some aspects of perfectionism are adaptive in helping the individual manage demands (Rice, Leever, John, & Porter, 2006). Elevated perfectionism is a developmental risk factor for depression, anxiety and eating disorders, but is also a facet of these disorders (Arpin-Cribbie, et al., 2012; Henning, Ey, & Shaw, 1998; Rice, et al., 2006). Upon entering university, high-achieving students may now be attaining lower grades and be with other top achievers, and so become more exposed to perceived failures (Enns, et al., 2001). Some participants had awareness of the detrimental nature of perfectionism, and interventions may be useful in helping students develop more adaptive mental states, as well as for their overall mental well-being (Arpin-Cribbie, et al., 2012).

4.5.3 Theme 3 - Perceived concerns about and challenges to seeking help for mental well-being

This overarching theme reflects students' experiences of mental health help-seeking and perceptions of help sources. Participants, both with and without experiences of seeking help, described a range of perceptions and beliefs about help sources available to them for their mental well-being. Six subthemes emerged from analysis, and findings are presented in subheadings relating to each type of help source.

4.5.3.1 GPs not perceived as able to give help for mental health issues

Six students described how they perceived GPs as not being able to provide help for mental health issues, or felt they were only able to help physical health problems. Some saw GPs as not having sufficient training, or insufficient knowledge in handling patients' mental health:

"I feel like doctors just kind of wouldn't be that interested in it [anxiety] [...] they'd probably [be] like 'it's not cancer mate, just get out' [laugh] [...] I don't know if like emotional stuff is that important to them" (Laura, P27 [GAD 10, PHQ 5], 1st Yr Neuroscience student, no diagnosis)

Three participants felt taking their mental well-being issues to their GP would be a waste of time, either for themselves or for the GP. Participants felt they would be putting pressure on GP's resources,

or that their psychological issues were not as important as other people's health problems:

"It [GP surgery] is just littered with [...] old people coughing and spluttering and wanting their next prescription, and it just doesn't seem worth sitting around for two and a half hours just to speak to someone because I'm a bit sad" (Lizzie, P16 [GAD 12, PHQ 17], 3rd Yr Animal Biology student, no diagnosis)

Seven participants, with and without experience of seeking help from their GP for their mental health, described concerns that their GP would not understand their mental well-being issues. Participants felt their GP would not listen to them, not have their issue taken seriously, or would automatically be given medication as treatment:

"They [GPs] don't seem to really listen to you, they just listen to what symptoms you say and then it's just like prescribe drugs and that's it [...] it's not a good way to deal with things like that [...] they shouldn't just give out drugs just as soon as someone complains about something, they should try and suggest other ways [...] I just didn't feel like she [GP] really cared much" (Clare, P24 [GAD 6, PHQ 6], 1st Yr German & Portuguese student, diagnosis of depression and anxiety had sought help from GP)

Such perceptions are in line with previous research exploring young people's opinions about GPs (Biddle, et al., 2006), and are also common within the general public. Molly (P26 [GAD 8, PHQ 13], 3rd Yr History student, no diagnosis) felt her GP's lack of understanding

was due to insufficient communication, which may have meant the GP did not explore her emotional problems, or were medicalised:

"I went to talk to him [GP] about my cold [...] I said 'and also I've like had this massive breakup and it's I'm just finding things really hard and I'm tired all the time and I can't really cope', and so he sent me off for blood tests for fatigue instead of realising that actually what I was saying was like it's more of an emotional thing [...] I should have been a bit more vocal about [...] why I thought I was feeling that way"

One student (Dan, P37 [GAD 9, PHQ 8], 2nd Yr Nursing student, no diagnosis) described how he was concerned that his GP would not perceive his sleeping problems as serious, but actually found the opposite during the consultation. However, as this participant had sought help for a sleeping problem, there may be different perceptions in GPs' ability to provide help depending on the nature of the health issue. Related to concerns about not being understood, was the fear of unknown in seeing a GP for a mental health issue and its consequences, or that the GP would suggest a treatment different to what the student felt they wanted:

"I suppose sometimes I feel like I'm a bit 'crazy', and I wouldn't want to go to the doctor and have them tell me I should be in like an insane asylum or something [...] I don't feel normal sometimes. Not in necessarily a bad way but like I'm a bit weird [laugh] [...] I

wouldn't want one [GP] to tell me I was weird" (Rosie, P23 [GAD 11, PHQ 11], 2nd Yr Music student, no diagnosis)

Three participants mentioned other concerns about seeing a GP, including the shortness of appointments/consultations; beliefs that medical treatments are not effective; and concerns that their symptoms are not chronic enough to warrant help. Four students, who had received a diagnosis (or were in process of doing so), described concerns about the continuity of care from their GP. One student also stated this had occurred within her university, wherein she was assigned to different tutors during her degree. These participants felt that seeing the same GP every time was helpful, but found it difficult when they saw different doctors, due to having to re-explain their medical history:

"I always go to the same doctor cos, I mean I am worried that some other doctor might not be as understanding, but yeah he's really helpful [...] they know me" (Naomi, P14 [GAD 18, PHQ 21], 2nd Yr Sociology student, diagnosis of depression and anxiety)

From these varied findings and experiences, it appears students may need education about the relevancy of GPs as a help source and how GPs can help students manage their mental health issues. Likewise, they may also need support in how they can approach their GP to discuss mental health problems.

4.5.3.2 *Students' concerns about psychiatric medication*

Participants, both with and without experience of being prescribed medication, described a range of issues relating to medication for mental health problems. Eleven students described concerns they had regarding their effectiveness, and issues about their secondary side effects:

"I sort of read on the internet about the [...] effects of it [...] I didn't want to be walking around like a zombie!" (Holly, P1 [GAD 7, PHQ 9], 2nd Yr Animal Biology student, past diagnosis of depression)

Similarly two students, who had strong knowledge of biology and neuroscience due to their degrees of study, identified personal concerns about how medication affects the brain, and could potentially impair skills they needed for their studies:

"It took me a lot of courage to actually take the first one [anti-depressant tablet] [...] I think I was scared that it would muck my brain up because [...] I kind of needed it to carry on at uni, so I didn't want to take a tablet that was going to affect my brain, cos then I wasn't sure what it was going to do to me, whether it was going to make me more crazy [...] I don't really like taking tablets for stuff anyway, and I think because your brain's like a major part of you and it can change who you are, that was quite a tricky thing to do" (Charlotte, P13 [GAD 5, PHQ 5], 4th Yr Medicine student, past diagnosis of depression)

As briefly mentioned by Charlotte (P13) above, a further two students expressed dislike for pharmaceutical treatments:

"I took them [anti-depressants] for like a couple of weeks, but then I decided that I didn't want to rely on drugs so I stopped taking them [...] it's not the right thing to do [...] if I came off them then I'd just feel the same again, so all it was doing was [...] like delaying or [...] pushing it away, and I just thought 'no it's better for me to just deal with it now and try and figure out why I'm feeling this way', rather than just trying to cover it up with drugs" (Clare, P24 [GAD 6, PHQ 6], 1st Yr German & Portuguese student, diagnosis of depression and anxiety)

A few other concerns relating to the use of psychiatric medication were mentioned, which related to different treatments needed for different types of depression, personal inexperience of medication, and a strong distrust of psychiatry and the related pharmaceutical industry. Joanna (P31 [GAD 9, PHQ 12], 1st Yr Psychology student, diagnosis of depression and anxiety) had positive experiences of being on medication for depression and anxiety, despite having some side effects. Joanna was studying psychology, and was strongly aware of the neurobiology of medication. She was aware of how medication is often negatively perceived, but provided some personal insight into their benefits:

"Some people have the wrong mechanism whereby you just don't have enough serotonin and you just need a little bit of help to get more of it [...] it doesn't necessarily a bad thing [sic] that a little bit

of medication helps you because it'll help you in so many ways, and once you're feeling better you can learn to help yourself [...] and then you can slowly reduce the medication and still help yourself, and eventually not need medication [...] I think it's fantastic that [...] we have this medication"

4.5.3.3 *How effective is university counselling?*

This third subtheme relates to students' perceptions of university counselling services, both in how it can be perceived as beneficial, but also in how students may have many concerns about it. Twelve participants disclosed counselling experiences, either from a university-based or private counsellor, or had received school-based counselling prior to entering university. Counselling was generally perceived as being a helpful way to talk about issues or relive feelings, and a counsellor was considered a more relevant individual to talk to about emotional and mental health issues. However, just because they were perceived as relevant did not necessarily mean they would be accessed:

"I suppose I'd be more inclined to seek help from a counsellor because that's sort of their job, but I still think [...] I would find it hard to do" (Helen, P15 [GAD 12, PHQ 13], 1st Yr Theology student, no diagnosis)

A minority (N=3) stated that talking about their feelings or issues was therapeutic itself, although the effects might not have been immediate:

"I didn't find it [school-based counselling] useful at the time [...] I just thought it was stupid cos he couldn't say anything to like help me, he'd just ask me questions and just [...] listen to my answers but wouldn't do anything, so I found it pointless. [...] Looking back now [...] it's better than having like bottled it all up cos otherwise I probably wouldn't have spoken to anyone about it, so I guess [...] it was quite beneficial" (Clare, P24 [GAD 6, PHQ 6], 1st Yr German & Portuguese student, diagnosis of depression and anxiety)

Six participants felt that while counselling can be effective, they believed it would not be useful to them or the specific mental health issues that they would be having:

"[counselling is] not going to help me cos I know what I'm feeling, I know what I'm experiencing and there's not really much help in telling them this is what's going on unless they sort of can really sort of pin-point what it is I'm experiencing, but because it's so subjective [...] their help is not going to be of any help to me because they're not in my head" (Amy, P28 [GAD 12, PHQ 15], 3rd Yr Law student, no diagnosis)

A few students described how counsellors could not provide them with direct advice, which appeared to affect their beliefs about its usefulness. Chloe (P10 [GAD 14, PHQ 11], 2nd Yr Sociology student, diagnosis of depression and anxiety) reflected on this from her own experience:

"They [counsellors] say that they don't give advice - the point is that in counselling you come to realise the advice for yourself, but I

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just didn't have time for that [...] I'm quite an impatient person [...] I'm quite happy to tell you my problems [...] but then I want you to fix it for me, like, I don't want you to be patient and wait for me to fix it myself, I want you to tell me what I need to do [...] I struggled with that"

Six participants described uncertainty about what counselling actually involves, what it is, or were unsure about its outcomes. A few students who had counselling prior to university also expressed uncertainty about what would happen within university-based counselling:

"I've heard of it [counselling] in like films and stuff but [...] I don't know the details [...] you just talk to them and they tell you things that could help problems" (Jenny, P33 [GAD 12, PHQ 11], 1st Yr Mathematical Physics student, no diagnosis)

Two students who had tried to access the counselling service described difficulties due to waiting lists and the time of year they sought it, meaning they may have coped with their issues by themselves:

"I did try at one point [to seek counselling] [...] the waiting time was over a week [...] I didn't think it would be that long [...] so I just didn't bother" (Joe, P17 [GAD 6, PHQ 6], 1st Yr Management Studies student, no diagnosis)

Students mentioned several additional concerns about counselling, including: worries that a university-based counsellor would not be as

beneficial as their previous counsellor; their previous negative experiences would be repeated with a university-based counsellor; or that the type of counselling they would receive would not be in line with their preference.

There has been increased provision of one-to-one counselling in British secondary schools (Jackson et al., 2014), and so students may be more aware of it and its benefits prior to university. Likewise, students may have positive attitudes towards counselling given their prior exposure. As some expressed ambiguity about counselling and what it involves, students may benefit from education and exposure about the counselling process. A brief video-based intervention, in which services users and a clinical psychologist described psychotherapy and their experiences of it, was found to improve students' attitudes towards psychotherapy, increased their confidence in speaking to professionals, and improved their beliefs about how professionals can help (Buckley & Malouff, 2005). This strategy could be applied to the developed intervention, in order to expose students to proxy experiences of available help.

4.5.3.4 *Tutors are for academic problems only*

This subtheme relates to perceptions of accessing help from, or disclosing mental health issues with, university tutors. Eight participants felt that they could only see their tutor for academic-related issues, or if their mental health problems were affecting their academic performance:

"He's [tutor] just like a really cool guy [...] but he's not someone that I'd be like 'ohh I feel like this' [...] I don't think I'd really say anything to him other than about work [...] he's lovely, but it's just he doesn't seem like the type at all" (Laura, P27 [GAD 10, PHQ 5], 1st Yr Neuroscience student, no diagnosis)

Similarly, three participants felt their tutor would not be interested in their students' personal life or their non-academic problems. One student also felt the same was true with lecturers, due to differences in teaching approaches between further and higher education. This may have been mediated by the perception that university tutors are authoritative:

"There's a certain line that you just feel you can't really cross [...] it's like a line between academia and your personal problems you know, it's kind of difficult speaking to these academics who [...] can be quite intimidating and lofty [...] they have their kind of rarefied offices [...] and you feel when you come with a personal problem it exposes your vulnerability [...] it's not really their domain" (Luke, P21 [GAD 19, PHQ 16], 4th Yr German student, diagnosis of depression and anxiety)

Five participants mentioned a limited relationship with their tutor, which could affect their decision to disclose their difficulties or personal problems to them:

"I didn't go to my tutor at first because, well, we don't see them very often, so it's not really something you kind of want to discuss

with them" (Charlotte, P13 [GAD 5, PHQ 5], 4th Yr Medicine student, past diagnosis of depression)

Students felt that tutors' abilities to sympathise and comprehend mental health difficulties varied on a case-by-case basis. Eight participants described positive experiences of disclosure to their tutor or other academic staff, although in doing so they may have felt some of the previously-described concerns. As a consequence of disclosure, many said they were able to access support needed to help manage their academic studies:

"It's the first step thing when you're talking to your tutor because I know other people whose tutors aren't very helpful at all, they don't understand and then they're just like 'oh you'll be okay, get on with your work', and I think greater [...] information for tutors would be helpful" (Naomi, P14 [GAD 18, PHQ 12], 2nd Yr Sociology student, diagnosis of depression and anxiety)

In contrast, Ruby (P30 [GAD 16, PHQ 20], 2nd Yr Art History student, diagnosis of depression, anxiety & PTSD) expressed feelings of discrimination and stigma from her tutor, due to her long-lasting mental health issues:

"I've felt like I've been quite discriminated against for having mental health issues [...] I need a lot of extensions and things like that for my essays, I find deadlines really stressful [...] if my tutor doesn't understand that and they think it's laziness or something, I really need to feel comfortable to be able to go and talk to them cos I think when I dropped out of my first degree, I was just so scared of

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going in, and I probably could have had help through it, but I couldn't even get to the point of talking to anybody [...] I think they just get a bit fed up that [...] you've got a mental disability or something and [...] when it's gone on for over a year [...] they get a bit frustrated and they don't want to help you as much"

Tutors were perceived as not having an overly pastoral role, and were solely for academic issues; previous research has found both students and academic staff have uncertainty about the type of support expected from tutors (Owen, 2002). This is somewhat concerning as personal tutors are one support system for students (Royal College of Psychiatrists, 2011). These findings reflect another British study, wherein students had low expectations of their tutors' support, with many not seeking support as they felt tutors had more demanding priorities (Owen, 2002). The present sample's concerns about being negatively judged by their tutor, or that disclosure would affect their academic grading, has been reported in previous research (Owen, 2002; Storrie, et al., 2010).

The tutorial system has declined in use and importance in recent years, partially due to academics' research and administrative demands (Royal College of Psychiatrists, 2011), and so it is understandable that students would not disclose to their tutors if they were experiencing difficulties. The increased distance and poorer relationships between tutors and students, alongside students' emerging adulthood and increased sense of independence,

may be influencing students' decisions not to disclose issues to their tutors, as they feel they should sufficiently self-manage and are aware of their tutor's workload. Disclosure to tutors may be unintentional and only be done to access relevant support, or to inform them of why it might affect their academic performance (Stein, 2012).

Tutors may lack information about their role's boundaries or expectations, and not have sufficient skills to help students with mental health difficulties. The present findings suggest students would benefit from knowing how tutors can help. Some participants stated their tutors' ability to help students' non-academic issues were variable depending on their approach and experience in helping students, as well as the quality of the tutor-student relationship. Tutors' abilities to provide pastoral support for students may vary by their academic discipline and their level of MHL (Laws & Fiedler, 2012). Academic staff in one Australian study felt that new staff should receive training in mental health first aid (MFHA) to improve their skills and confidence in helping students (Laws & Fiedler, 2012)

4.5.3.5 Praise for mental health advisors and disability support services

Three students who disclosed their difficulties to the university had used specific university-based services available for students with diagnosed mental disorders. One participant had participated in an early induction program prior to starting university, in order to help

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provide additional familiarity and adaptation to student life. Mental Health Advisors (MHAs) and disability services were useful sources of support and help:

"they [MHAs] kind of look more in a practical way as to what you can do to help [...] with like getting extensions, and then like practical ways of how I can help myself with the depression and like encouraging me [...] instead of being in my room, try and spend like an hour downstairs with people, to see how that works [...] I think they've been [...] more useful than counselling, cos it's trying to find practical ways around things [...] I think it's just built my confidence a lot more [...] it's just little things like that which [...] build your self-esteem up and think 'yeah I can do this', you know. It's like having a positive role model" (Naomi, P14 [GAD 18, PHQ 21], 2nd Yr Sociology student, diagnosis of depression and anxiety)

These positive experiences contribute to the limited evidence available suggesting these services are appreciated, and provide practical support in helping students negotiate their academic performance with their mental disorder (Demery, et al., 2012; Tinklin, et al., 2005).

4.5.3.6 Challenges students face in disclosing to others

This sub-theme relates to personal challenges or difficulties students face in disclosing their mental health difficulties or feelings to other people. Four students described issues around fears of being

perceived as 'weak', either for having difficulties or in disclosing them. Disclosure may affect how others perceive them:

"It would have been really helpful to know that I wasn't the only one who was so unhappy [...] it's not the kind of thing you say to people like in halls and things cos you don't want to be seen to be miserable [...] everybody seems to be having such a great time, and you almost get kind of labelled as like 'that one that's not enjoying herself and doesn't want to be at uni'" (Amanda, P25 [GAD 4, PHQ 6], 2nd Yr Natural Sciences student, no diagnosis)

Four participants also mentioned possible difficulties opening up or talking about their feelings and mental health, or how to express their emotions. Furthermore, ten students appeared to suggest help was not needed unless their symptoms were very severe, or were affecting their ability to do tasks:

"If it ever gets to that point where [...] I'm feeling really down, depressed, or really, really anxious every day, I probably would have gone to have seen someone like a university counsellor" (Will, P36 [GAD 7, PHQ 8], 3rd Yr Music & Philosophy student, no diagnosis)

This somewhat resounds with Biddle et al. (2007); young people saw help as only being needed for 'real' distress, and help-seeking indicated their coping skills has been exhausted. It is possible that these students were not aware of the importance of early intervention for mental health issues. Other challenges described by students included concerns that other students would not

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comprehend the impact of mental health difficulties, embarrassment in speaking about feelings or seeking help, difficulty disclosing due to being in new environment with new people, and its impact upon fitness to practice:

"I'm not sure where they draw the line when it comes to fitness to practice with mental health issues, cos it's a lot harder to draw. It's not like physical health where you physically can't do the job, it's not that straightforward and it does go through phases [...] but I think medical students would certainly be less likely to talk about it because of the fear of its implications with fitness to practice" (Ben, P4 [GAD 7, PHQ 6], 3rd Yr Medicine student, no diagnosis))

Conversely, Ruby (P30 [GAD 16, PHQ 20], 2nd Yr Art History student, diagnosis of depression, anxiety & PTSD) described how being honest and open to others about her mental health was preferable for her:

"I'm pretty comfortable about talking about it, so I'd much rather just say [...] I have anxiety [...] rather than have to make little lies and look like I'm having a lot of drama going on and things, cos I think that pushes people away"

Many of these challenges are in line with barriers that hinder help-seeking in young people. Three other challenges, not fitting into the above sub-themes, also emerged from the interviews. Five participants described how the meaning of the help sought, and the

stigma of the help-seeking process, were factors affecting help-seeking or how they felt about the treatment offered to them:

"I didn't like the idea of being on crazy pills, like, the idea of having to take tablets cos I'm crazy" (Andy, P8 [GAD 13, PHQ 16], 1st Yr Print Journalism student, in-process diagnosis of depression)

Concerns relating to the characteristics of the help source were also mentioned, which included the therapist's approach, the gender of the professional and their level of qualification. Additionally, two students mentioned that having other academic commitments would mean seeking help was not their priority. Beth (P2 [GAD 4, PHQ 11], 3rd Yr English & Creative Writing student, diagnosis of bipolar disorder) who was diagnosed with bipolar disorder whilst at university, felt that her university did not sufficiently promote academic support that was available to students with mental health difficulties:

"I wasn't aware that I could get extra time [in exams] [...] cos you don't really get any information if you do have mental health problems, it's not one of the things that is advertised very well around the uni, apart from dyslexia [...] I didn't really know that there was any help that I could get"

4.5.4 Theme 4 - Students' coping and management of their mental well-being

It was difficult to produce subthemes reflecting strategies students used to help their mental well-being, due to the diversity described in the interviews, and participants in the interviews described little meaning about why they used such strategies. Content thematic analysis was used to identify endorsement of particular strategies. Participants described a range of strategies they used to help manage their well-being. This management also included descriptions of how participants managed their stress or sleeping difficulties, as many did not disclose experiences of mental health difficulties.

4.5.4.1 *Students' use of proactive self-help strategies*

A variety of self-help strategies were mentioned: those endorsed by several participants included the use of exercise, self-reliance, taking part in meaningful activities, stress management and relaxation, past alcohol and drug use, and lifestyle management. The use of exercise or physical activity to improve mental well-being was described by ten participants. Many described how physical activity provided therapeutic benefits, such as helping their mood, helping their levels of productivity, and distracted or altered their current feelings:

"Exercise is something that's kept me going [...] it's given me a sense of purpose [...] I don't know if it's alleviated the depression

but [...] it's kind of masked it for a while [...] it's enabled me not to think about it, I think dwelling on the depression itself can just be conducive to producing a kind of depressive mood [...] I run sort of five or six miles in the morning and [...] it's that routine that kind of, yeah, it makes the day easier as well, it makes you feel slightly more relaxed, so I'm less intimidated when I come into the library and it's busy" (Luke, P21 [GAD 19, PHQ 16], 4th Yr German student, diagnosis of depression and anxiety)

Some students described how they preferred to rely on themselves to get through periods of stress or mental health difficulties. Self-reliance encompassed a range of strategies used by participants, although a few did not endorse any particular self-reliance strategy. Three described how they felt they had emotional awareness of when their mental state was changing, or were aware of how to self-manage:

"I know exactly what I need to do to like make myself better I think, so I think well there's no point in just going [to see a counsellor] [...] I just think well I'll get on with it myself" (Holly, P1 [GAD 7, PHQ 9], 2nd Yr Animal Biology student, past diagnosis of depression)

Purposely isolating oneself or concealing feelings/emotions were also used as a mechanism by a few students, when they were experiencing elevated poor mental well-being or having difficulty coping:

"To my friends I'm very good at hiding whatever's going on, one of my particular skills is [...] putting on the happy face - I'm brilliant at

that" (Amy, P28 [GAD 12, PHQ 15], 3rd Yr Law student, no diagnosis)

For six participants, taking part in pleasurable or meaningful activities/hobbies was mentioned as a way to help change their mental well-being. These participants described several benefits to this, including how it provided a way of relieving academic stress, helped change their mind-set, or felt therapeutic:

"what we [her and counsellor] identified was [...] [to] make time for myself, cos that's not what I wasn't doing [...] really simple things that [made] really big differences [...] I made sure that I was only doing things that I really enjoyed rather than doing it cos I felt like they'd look good [...] I focused on making nice meals for myself and like making my room look nice, [...] having a good book to read and like taking time out to watch a film, stuff like that – really really simple things but things that I just wasn't doing [...] all put together made a really big difference to things and [...] understanding that mind-set of like, you can go out and have fun and do something like watch a film, it doesn't matter if it's not useful, like, cos that was the mind-set that I was going back into" (Sara, P9 [GAD 5, PHQ 4], 4th Yr Medicine student, past diagnosis of anorexia and experienced relapse at university)

Stress management techniques, including meditation and breathing techniques, and more 'distractive' techniques such as watching TV, reading, or playing video games, were reported by twelve

participants. The use of specific audio tracks (e.g. calming sounds, relaxation guidance) was reported by two students. Will (P36 [GAD 7, PHQ 8], 3rd Yr Music & Philosophy student, no diagnosis) described how he would change his environment to help him feel more comfortable when he felt anxiety during his first year of university:

"I'd sit on my bed and [...] turn on the lamp and I'd watch something on my laptop cos I think that kind of helped to emulate what my bedroom was like at home, when I was in like my last year of sixth form and in the summer before I came to uni, so I think that kind of gave me a sense of familiarity and maybe a bit more comfortable [...] it wouldn't help the problem that much, but it did help a bit, and I definitely got into a habit of doing that if I ever started to feel the anxiety and I was on my own"

Three students mentioned previous use of alcohol or drugs to help manage their mental well-being, but no longer appeared to use these methods to help themselves, and appeared aware that these were not necessarily helpful for their mental well-being. Alcohol, recreational drugs and over-the-counter medication were previously used to help alleviate feelings of anxiety, either in social situations or as a sleeping aid:

"I felt that I could make friends and have a social life through drug use [...] because when I was on drugs or alcohol, it's the only time that I didn't have anxiety, so I could fully have a conversation with somebody and not be blushing all over and just actually feel like

myself" (Ruby, P30 [GAD 16, PHQ 20], 2nd Yr Art History student, diagnosis of depression, anxiety & PTSD)

A minority mentioned comfort or emotional eating to help cope with feelings, and one explicitly stated use of self-harm to help his episodes of depression. Four participants described aspects relating to overall lifestyle management, including having a healthy diet and keeping a routine, which helped them regulate their mental well-being:

"I've completely switched from caffeinated to de-caf [tea/coffee] [...] being repetitive in what I do and when I'm going to bed and things like that have helped me sleep" (Chloe, P10 [GAD 14, PHQ 11], 2nd Yr Sociology student, diagnosis of depression and anxiety)

Another related aspect was the use of time management. Five participants mentioned how making lists was useful for managing their workload, and helped their stress and anxiety:

"When I start feeling stressed, I'll plan everything I'm going to do [...] I find it a lot easier to follow - like if I have a list of things to do and just through the steps, like I'm doing them without thinking about anything after, or I'm just focusing on that little task [...] so it makes me more focused on the one thing rather than worrying about everything" (Jenny, P33 [GAD 12, PHQ 11], 1st Yr Mathematical Physics student, no diagnosis)

Other strategies mentioned by a minority of participants included seeking out information; self-help books; religion; purposely

exposing self to anxiety-inducing situations; changing mind-set to be more positive; sleep hygiene; lucid dreaming; and engaging in academic work. Two students described how seeking out information helped them to understand and self-manage their difficulties; this appeared to overlap with monitoring/blunting coping styles:

"I had a panic attack at school [...] he [school tutor] was like 'right this is what's happening, you're getting the tingling sensation cos your airways have closed up so you're not getting the oxygen and you're breathing too quickly, so you're getting too much carbon dioxide and not enough oxygen' [...] explain like the science of it [...] so I tend to do that now if I'm getting it, I kind of think 'right this is happening because of this, so I need to do this in order to relax it'" (Chloe, P10 [GAD 14, PHQ 11], 2nd Yr Sociology student, diagnosis of depression and anxiety)

Although students' perceptions about the effectiveness of these strategies were only limitedly explored, some mentioned that the strategies were not necessarily associated with positive outcomes. This may have been due to them not fitting in with the nature of student life:

"I've tried everything [for sleeping issues] without the doctor having to put me on tablets [...] have a hot bath, don't go on the computer after six o'clock, you know that sort of thing, and I'm thinking 'it's alright for you, you haven't got a dissertation due in, you haven't

got ten-thousand words due in four weeks” (Lizzie, P16 [GAD 12, PHQ 17], 3rd Yr Animal Biology student, no diagnosis)

The wealth of self-help strategies used by the sample further adds to evidence suggesting holistic practices are preferable and useful mechanisms used by this population to manage their mental well-being (Martin, 2010). A review of 38 self-help interventions found good quality evidence supporting the use of exercise in managing depression and reducing symptom severity in adults (Morgan & Jorm, 2008). Engaging in physical activity was perceived by young Australians as the most helpful self-help intervention for mental health, and was the most commonly used self-help strategy in those with a mental health problem (Reavley, et al., 2012b; Reavley, Yap, Wright, & Jorm, 2011). The university setting provides many opportunities for students to engage in activities which may help mental health, such as sports clubs and societies. Concerns about students' alcohol use for self-medication (Demery, et al., 2012) do not appear to be overly supported in the present sample, as only a minority reported use of drugs or alcohol. Young people appear aware that reducing alcohol and drug use can be helpful for mental health, and can be detrimental for relaxation (Reavley, et al., 2012b; Reavley, et al., 2011). However, in one cohort, similar numbers of young people reported cutting down alcohol intake (37%) and used alcohol to relax (33%) for their mental health, even though only 3% of the sample believed drinking alcohol to relax was helpful (Reavley, et al., 2011). It may be students are using alcohol

as a form of self-help, but perceive it as being a 'small' amount, and therefore is justifiable. One participant in the present study disclosed self-harming to help cope with their depression. Coping strategies that are maladaptive and less socially acceptable may be perceived as beneficial to some young people (Martin, 2010).

4.5.4.2 *The value of social support*

Many students described how social support contributed to helping or maintaining their positive well-being. Students generally reported receiving a good quality of support from their friends, parents, siblings or partners. These informal sources were described as being helpful in providing emotional support and helped monitor their mental well-being, and appeared to be preferred over available professional help. Through social support, participants described how simply talking (not necessarily about their mental well-being/feelings) helped to relieve their feelings or help them feel better, and how social contacts can be used to help monitor or manage their mental well-being:

"It's quite nice to know that there's people around you who have that in the back of their minds. Like when my boyfriend and I broke up [...] she [friend] said to me 'oh you know, you've obviously been fine but if you have stopped eating [...] that's I was worried that was going to happen, I kind of had my eye out for you', so it is good that someone else knows" (Sara, P9 [GAD 5, PHQ 4], 4th Yr Medicine student, past diagnosis of anorexia)

Three students described experiences of using online social resources (e.g. forums, testimonials) to help understand and process their feelings. Two students described how reading testimonials from others reduced feelings of perceived isolation, and that they were not alone in experiencing psychological distress. Clare (P24 [GAD 6, PHQ 6], 1st Yr German & Portuguese student, diagnosis of depression and anxiety) described how she had not necessarily sought support from people she knew, but had used an online student-based forum to read about experiences of similar students:

"I'd go on The Student Room a lot, I mainly was just looking for people that had been in similar situations [...] talking about them having difficulties settling in at uni and making friends [...] I guess it would make me a bit more hopeful and think that maybe my situation would improve like theirs did" (Clare, P24 [GAD 6, PHQ 6], 1st Yr German & Portuguese student, diagnosis of depression and anxiety)

Many students described two friendship networks: those at home, and those at university. One student described contrast between the support she received respectively from home and from university-based friends, possibly due to the changes in their friendship since starting university. Adam (P35 [GAD 9, PHQ 14], 1st Yr German and Russian student, no diagnosis) described how the new friendships

he had made were not yet fully developed, and so affected his ability to gain support from them in times of need:

"Best friends from home who I've been friends with for a long long time [...] they're always like dead loyal to me and it's the other way around as well [...] although I've still got some really good friends [at university] and people who I can see myself becoming like that way, the fact is I've only known them since September [...] I know I get on with them really well and we have great fun together and we've got a lot in common, when you think [...] like how much do I really know about them, the answer's very little [...] my best friends back home [...] [I know] their past, their secrets, how they react to things, like their emotional sort of gear [...] I don't really know that at all about anyone at uni, so obviously like I feel far more comfortable confiding in my best friends back home [...] than I do with anyone at uni cos I don't really feel like I'm in that stage of friendship yet"

For those who had a diagnosed mental health condition, many were overwhelmingly positive about the support they received from family and friends. In particular, friendships were perceived as positive, as their friends acted non-judgementally and did not treat the individual any different due to their mental health difficulties:

"They [friends] accept the way that I am, and are like 'well if you ever need to talk, then you know I'm here', and if I do feel like I need to talk, they're there and they just listen, they don't judge what I say or anything and I think that really really helps. And they

don't kind of define me by my illness [...] they see me as a person rather than an illness" (Naomi, P14 [GAD 18, PHQ 21], 2nd Yr Sociology student, diagnosis of depression and anxiety)

Two participants mentioned that having friends who also had experience of a mental health difficulty was beneficial in gaining more empathic support. Joanna (P31 [GAD 9, PHQ 12], 1st Yr Psychology student, diagnosis of depression and anxiety) also described how having an established network of university students who self-defined as having a disability (Disabled Students' Network) allowed her to find students similar to her, and had better and lived understanding of the issues felt by students with similar issues. However, some students did describe some concerns they had in seeking out social support for their mental well-being. Five participants mentioned that one reason they did not particularly talk to their parents about their feelings was to avoid burdening them or inducing worry. Four participants described negative attitudes and lack of sympathy from others:

"My parents are the type who are very kind of independent and 'you should deal with it yourself' and [...] 'depression, oh it doesn't exist, you should just tell yourself it, you'll be okay and you'll be fine' [laugh] and I think in a sense they'd felt like they had brought it on, cos I think parents do feel like they've got a responsibility over their children and I think they just felt really bad that they had somehow

caused me to feel that way" (Naomi, P14 [GAD 18, PHQ 21], 2nd Yr Sociology student, diagnosis of depression and anxiety)

As with some in the present study, some students in Martin (2010) did not deeply disclose their feelings to others as they did not want to worry them. Not wishing to burden others is one barrier to help-seeking in young people (Gulliver, et al., 2010). Other concerns and issues mentioned by some students related to whether they had anyone they trusted and whom they could confide in or disclose to; uncertainty how family could provide support; and difficulties in how others may understand or interpret their mental health issues. Some of this may overlap with concerns described in the previous theme (4.5.3 - *"Perceived concerns about and challenges to seeking help"*).

Emotional and practical social support was helpful to students in managing their emotional well-being whilst at university. Furthermore students with a diagnosed mental disorder sounded satisfied with their friendships, as they had encountered minimal judgement or stigma from them; this is in line with Australian students' views, wherein good quality friendships were derived from friends through them being understanding, dependable and non-judgemental (Martin, 2010). Students in Demery et al. (2012) felt effective family support helped them manage periods of severe mental distress, and helped minimise triggers at university. One participant in the present study described gaining positive peer support experiences through the university's Disabled Students'

Network; similar support networks have been described as aiding students' socialisation, reducing their isolation, and allow them to share coping mechanisms and problem solving (Weiner & Wiener, 1996).

Informal support is frequently cited as the most endorsed form of help in young people; friends and family members may benefit from knowing how to best help and support those experiencing mental health difficulties. Mental health first aid (MHFA) is a term often used in the literature to describe the helping and supportive behaviours an individual can give to someone in need; it includes providing emotional and practical support, encouragement of professional help and promoting use of effective self-help (Rossetto, Jorm, & Reavley, 2014). MFHA has been adapted into an educational skills-learning course, with guidelines also freely available online on how individuals can support others in need (Hart, Jorm, Paxton, & Cvetkovski, 2012). Given students' preference for seeking help from their friends, this population may particularly benefit from MHFA training.

4.5.4.3 *Use of medication for mental well-being*

Six students reported current or past use of medication for their mental health or sleeping difficulties. Medication was perceived as being effective in improving their mental health, or provided additional support when they were particularly struggling:

"I know how to do [CBT] therapy for myself, but I couldn't do it accurately whilst being in the state that I was, so it seemed logical to go onto medication and then do the therapy myself and have official therapy as well [...] then slowly go off the medication until I can deal with everything without help" (Joanna, P31 [GAD 9, PHQ 12], 1st Yr Psychology student, diagnosis of depression and anxiety)

Dan (P37 [GAD 9, PHQ 8], 2nd Yr Nursing student, no diagnosis) felt confused about whether the prescribed medication he was given for his sleeping difficulties was effective, or whether it was a placebo effect:

"I don't know if it was just the thought of [...] 'I've got these tablets to help me go to sleep now' [...] and it was just more of a worry thing kind of like being relieved from worrying helped more than the actual tablet, I don't know"

In contrast to pharmaceutical medication, four students mentioned the use of alternative/complementary therapies or supplements to manage their mental well-being:

"I got another book [...] 'Six Steps to Beating Depression' - I prefer that book cos [...] it had like natural ways, it talked about like vitamins and exercise and stuff like that [...] I prefer [...] that kind of approach, like natural things" (Clare, P24 [GAD 6, PHQ 6], 1st Yr German & Portuguese student, diagnosis of depression and anxiety)

Apprehensions about psychiatric medication are very common in the general population, and students with mental disorders have

described mixed views about them (Demery, et al., 2012; Stein, 2012). Similar to the present findings, some people consider medication to be an aspect of their self-management, and students may use medication to help manage their lives at university (Anderson & Roy, 2013; Stein, 2012)

4.5.5 How these findings link to models of mental health help-seeking

The introductory chapter (section 1.3) describes two developed models, the Cycle of Avoidance (CoA) (Biddle, et al., 2007) and four-stage process framework model (Rickwood, et al., 2005), which theorised determinants and factors involved in the mental health help-seeking (and non-help-seeking) process. For the CoA, the university environment and social context of studenthood may shape what “normal” distress is. A qualitative study with thirty-six Dutch university students who had not sought help for their health problems found these students would conceal their health issues (and other aspects of their life), as these did not match their idealised image of a “successful and capable” student (Verouden, Vonk, & Meijman, 2010). Some students in this study described that they would act and behave in an expected manner, which was socially acceptable to other students; ‘acceptable’ behaviours did not include seeking out help. These students also felt stress and related mental distress to be an inevitable part of university life, was a “shared experience” among university students, and that

'idealised' students tolerate, endure and cope with it despite its impact upon their functioning and health. This, along with some of the themes that emerged from the present study, can be tied in with the CoA model, and how university students may normalise their mental distress to studenthood and avoid seeking help. The subthemes which were felt to align with the 'rationalising normal distress' element of the CoA were "*Is distress 'normal' or do I need help?*" (section 4.5.5.1), which described how students comprehended their symptoms and how the environment and other factors influenced their understanding; and some findings within "*Challenges students face in disclosing to others*" (section 4.5.3.6) mentioned how help was only needed for 'severe' difficulties, which had clear and explicit impacts upon their life.

Several findings from the present study tie in well with the four-stage process framework model (Rickwood, et al., 2005); Figure 12 outlines which themes/subthemes particularly resonate with this model. The developed intervention (see Chapter Six) was designed to change factors associated with going through Rickwood et al.'s theorised help-seeking process, which included how to recognise depression and the meaning of the symptoms, changing attitudes towards available professional help, education about help relevant to Nottingham-based students (e.g. contact information) and addressed other barriers towards help-seeking (e.g. outcome expectancies of help-seeking). These salient factors were identified from the present study, and through reviewing the literature relating

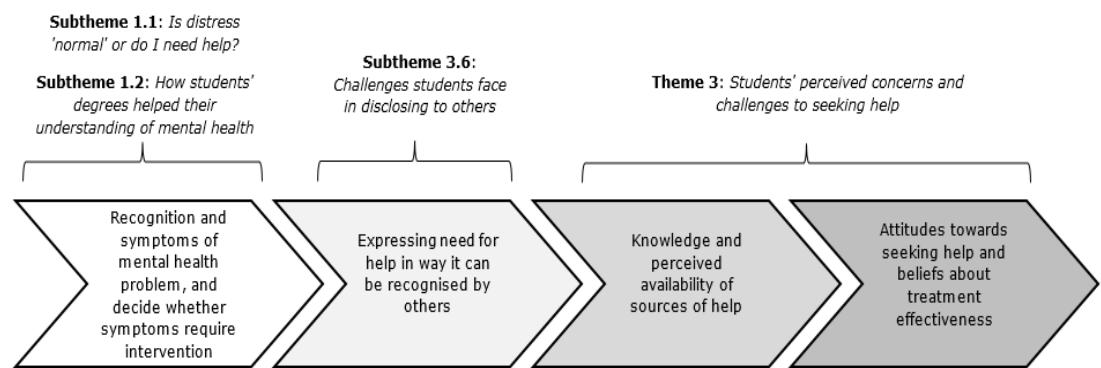


Figure 12. Rickwood et al.'s (2005) four-stage process help-seeking model, and where Study Three's themes/subthemes link into it.

to student mental health.

4.5.6 Strengths and Limitations

The restrictions placed upon the study by the university's ethical committee meant EBD was not able to be explicit about the perspectives and experiences that the study aimed to explore (e.g. not able to use term "mental health"). While this meant EBD was not so explicit about mental health during the interviews, it also meant fewer leading questions were used. The data varied greatly depending on participants' language and understanding of the study, with some describing in great detail their mental health-related experiences.

Despite some purposive sampling towards the end of the study, female students were over-represented. Previous qualitative mental health-related research with young people has shown variation in

their sample's gender balance (Biddle, et al., 2006; Chew-Graham, et al., 2003; Kranke, et al., 2013). The sample size may have hindered exploration of contrasts in perceptions and experiences, given the diversity in participants' backgrounds and experiences of mental health problems and help-seeking. Likewise, only three international students took part in the study. Students with personal interests in mental health may have been more likely to take part, and some had participated in the previous study (Chapter Three). Personal interests did not necessarily translate into positive experiences or perceptions relating to mental health. The qualitative approach of this study allowed participants with a range of opinions and experiences to be heard.

The eligibility criteria meant a variety of students were interviewed. Participants had a diverse array of experiences relating to mental health; some had experienced mental health difficulties or diagnoses themselves or through friends or family, while others did not disclose any history/experiences. Six participants, who described a past experience of a personal mental health problem, screened for minimal or mild anxiety or depressive symptomology. Parts of the interview schedule were flexible, so that questions were asked depending on the participant's own experience of mental health difficulties and help-seeking. This was beneficial as interviews could still take place despite minimal experience, but also disadvantageous as it resulted in variation in answers given that some participants received different questions depending on their

experiences. This resulted in the data being varied in its depth and quality, which added some difficulty to analysis. Thematic analysis was felt to be the most relevant approach to use given its flexibility and diverse sample. Interpretative phenomenological analysis, which focuses on how an individual within a certain context make sense of their circumstances, may have been appropriate on a more homogenous group (e.g. students with diagnosis of a mental disorder). As we were focused upon exploring a variation of students' experiences, a larger sample size was appropriate to cover the diversity of symptomology and mental health-related experiences. The criteria made the study more inclusive, and the variation in participants' backgrounds, experiences of mental distress, help-seeking and management resulted in a more diverse sample. This somewhat reflects the heterogeneity of student populations. Some participants also disclosed other health conditions, which may have impacted upon their mental health. Future research may benefit by seeking the retrospective perspectives of graduate students who experienced mental health difficulties whilst at university. As many participants in this study had not experienced a mental health problem, and so not had no need for help, the findings need to be treated with caution as their intentions to seek help may vary from actual behaviour.

It is possible that participants did not disclose their true experiences or gave socially-desirable answers; it was their choice to disclose their personal experiences in the interview. EBD did attempt to

make the interview environment comfortable, establish rapport with the participant, and was non-judgemental in her approach. Some participants who took part in the present study reported benefits (e.g. having an opportunity to talk, found the process therapeutic) afterwards to EBD.

4.5.7 Implications for aims of thesis

Several findings from this study can be applied to the intervention's development. Firstly, some participants discussed difficulties in assessing whether mental distress was normal or transient, or whether it required help. In addition, the wide range of stressors encountered by participants within the university environment may have a great influence upon students' perceptions of their mental distress, and their decision to use and seek out professional help. This seemed to somewhat align with the CoA non-help-seeking theory (Biddle, et al., 2007), and is important as the mental health help-seeking literature frequently states that correct identification and recognition of a mental health problem is considered the first step in the help-seeking process (Czyz, et al., 2013). Within the developed intervention, this could be addressed through education about depression, applying guidance about how to decipher the clinical meaning of symptoms (e.g. consider their severity, impact upon functioning), and also describe how significantly-impairing mental health difficulties are common in this population, and that they do not need to be overtly-impairing in order for help to be sought.

Secondly, participants with and without experience of mental health help-seeking described diverse perceptions about use of professional help and self-help to manage their mental well-being. One of the components of MHL relates to knowledge and attitudes towards available professional help, treatments and self-help (Jorm, 2012). Providing knowledge about what help sources are available does not appear to be sufficient; students need to know exactly what these sources do, how they can help and address the help-seeking and treatment concerns most prominent in this population. Within the developed intervention, a section could be dedicated to describing professional help available for students (e.g. university-based medical centres and counselling), which addresses this population's salient beliefs about these sources, outcome expectations of help-seeking, and how to access them. Furthermore, given students' preferences for self-management (Czyz, et al., 2013), a section outlining effective self-help strategies would be useful; these strategies could be used by a student experiencing sub-threshold mental distress, and in the long-term management of a mental health condition.

Thirdly, a small number of participants appeared to have a better understanding of mental health due to their subject of study. While this is somewhat unsurprising and aligns with previous research (Lauber, et al., 2005), we need to consider the MHL of those studying subjects that do not involve mental health-related curricula. These students may have poorer MHL, or more

stigmatising attitudes about mental health and help-seeking, and so may benefit more from an intervention to improve their MHL.

Finally, as with Study Two, friendships were described as important and valuable sources of support. This provides further reasoning for exploring how students support their friends in need of mental health support, and whether they are providing good quality help. This is explored in Study Four, and considers how this could be incorporated into the intervention.

4.6 Conclusions

This interview-based study with student participants explored factors which students felt affected their mental well-being at university, and showed the diversity of opinions when it came to help-seeking for mental health difficulties. Many findings that emerged from these interviews overlap with MHL (Jorm, et al., 1997) (see Chapter One). The recruitment strategy meant the study interviewed a diverse sample of students, with varying experiences (and non-experiences) of mental health difficulties, mental health help-seeking, and personal use of self-help for managing their mental well-being at university. It is clear that students experience a multitude of new experiences upon their entry into higher education, which affect their physical and mental well-being. In the present study, new living arrangements (e.g. moving away from home, living with other students), the academic system and workload, transitioning into studenthood and isolation, were

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commonly-reported factors impacting upon students' mental well-being. The online intervention may be able to target the MHL gaps that students appeared to have, such as beliefs about how GPs and counsellors can help students. The findings need to be treated cautiously due to the language restrictions placed upon the study by the ethics committee, which meant the semi-structured interviews could not be explicit and straightforward in discussing mental health.

Chapter Five: Study Four - The role of gender and type of course in predicting quality of mental health first aid in university students: an experimental study

5.1 Background

As described in depth in Chapter One, mental health literacy (MHL) is a paradigm referring to knowledge, beliefs and attitudes about mental health, which affects mental health help-seeking and treatment (Jorm, 2012). An aspect of MHL refers to helping behaviours provided to someone experiencing a mental health problem or crisis (Jorm, 2012). This is often referred to as mental health first aid (MHFA), and is defined as initial social, emotional and practical help and support that individuals can provide to others experiencing a mental health issue, until they receive professional help or until the issue is resolved (Yap, et al., 2012a). MHFA consists of six actions (abbreviated to 'ALGEE') that are applied to someone in need of help (Jorm, 2012; Kelly et al., 2011):

- Approach the person
- Assess risk and assist person with any crisis
- Listen non-judgementally
- Give support and information
- Encourage appropriate professional help (e.g. GP, counsellor)
- Encourage other supports (e.g. self-help strategies, support from family or friends)

Professionally-led MHFA courses have been effective in developing skills to enable adults to help someone with a mental health problem or crisis (Hart, et al., 2012; Kelly, et al., 2011; Kitchener & Jorm, 2002; Rossetto, et al., 2014). Through Delphi methodology, several evidence-based guidelines have been produced which outline the best MHFA practice for a number of mental disorders; these are freely available online for public access (Hart, et al., 2012).

University students' personal ability to provide first aid to others is important. As found in Studies Two and Three, friends are frequently used sources of help for students experiencing mental health problems (Biddle, Gunnell, Sharp, & Donovan, 2004; Brimstone, Thistlethwaite, & Quirk, 2007; Gulliver, Griffiths, Christensen, & Brewer, 2012; Reavley, McCann, & Jorm, 2012a; Wilson, et al., 2007). Friendships are established and trustworthy, and are also highly accessible to students (Martin, 2010; Wilson, et al., 2007). Furthermore, many mental disorders reach their peak onset and prevalence during young adulthood (Yap, et al., 2012a). Given these factors, students are likely to either encounter mental health difficulties themselves or know someone who is experiencing them (Furnham & Blythe, 2012). Shared accommodation is a typical aspect of British university life; those living with a student experiencing severe mental health difficulties may have to provide appropriate support and cope with the situation (Stanley, Mallon, Bell, Hilton, & Manthorpe, 2007). However students may not know what helpful actions they can take to respond to their friend's

mental distress, or not have the confidence to approach their friend about their mental health.

Limited research in young adults, primarily from Australia, suggests they intend to and actually use many MHFA actions when supporting close friends, and perceive them as helpful for the person in need (Reavley, et al., 2012a; Reavley, et al., 2011; Yap, et al., 2012a; Yap, Wright, & Jorm, 2011b). In 319 Australian university students with experience of a family member or friend with a mental health problem, the majority (90%) provided some form of help: listening/talking and giving emotional support were provided by nearly three-quarters (74%) (Reavley, et al., 2012a). However only 24% stated they encouraged professional help, with older students significantly more likely to do this.

It is also important to consider the role of gender upon MHL, mental health help-seeking, and MHFA. Although females have higher rates of common mental health problems (NICE, 2009), young males who are affected are less likely to seek out help, more likely to use harmful coping strategies (Ellis, et al., 2013) and have higher rates of suicide (Hawton, Casañas i Comabella, Haw, & Saunders, 2013). Several student studies suggest females have greater recognition and awareness of depression and other mental disorders, less stigma about mental health and help-seeking, and are more likely to encourage professional help (Furnham, Annis, et al., 2014; Furnham, Cook, et al., 2011; Youssef, et al., 2014). Likewise a large Australian study of young people (aged 15-25 years) found females

were more likely than males to suggest listening or talking to the person in need, suggest professional help and would assess suicide risk; however there were no gender differences in confidence to provide first aid to peers (Yap, et al., 2012a). Females' increased encouragement of professional help-seeking may be because they are more likely to seek out help for mental health problems themselves, and may have more favourable attitudes about professional help (Vidourek, King, Nabors, Lynch, & Merianos, 2014). Aside from mental health-related stigma, the social norms relating to hegemonic masculinity and expectations of males to be 'tough' and 'strong' can mean men are more likely to try to self-manage their mental health problems rather than seeking help. They also have a higher threshold for emotional sensitivity and responsiveness to symptoms, which could prevent young males from recommending help to others (Möller-Leimkühler, 2002; Yap, et al., 2011a). For university students, it is possible that their reluctance to seek help and talk about their mental distress may also align with wanting to appear as 'idealistic' problem-free students (Verouden, et al., 2010).

In an American student sample (N=1019), less than a fifth believed they could identify a friend at risk (11%) or could ask them if they were feeling suicidal (17%) (King, Vidourek, & Strader, 2008). People may hold beliefs that discussing the issue or asking sensitive questions (e.g. current suicidal feelings) with the friend may worsen the mental health problem (Jorm, et al., 2007a).

MHFA has been explored through vignette methodology: typically these are short stories describing a hypothetical person experiencing symptoms of a mental disorder (Minas, Colucci, & Jorm, 2009; Reavley, et al., 2012a; Rossetto, et al., 2014; Yap, et al., 2012a; Yap, et al., 2011a). Vignettes are usually either read by the participant, or read verbally aloud by the researcher; this may be a less realistic presentation of the mental disorder of interest, and could influence findings (Marshall & Dunstan, 2013). One Australian study found females were better able to recognise depression than males, with increased recognition overall when presented with a male vignette character (Cotton, Wright, Harris, Jorm, & McGorry, 2006). Through telephone-based interviews, male participants who heard the female vignette were more likely than female participants to state the vignette had a non-specific “mental illness” or that symptoms were caused by social factors. However the study did not control for the potentially confounding effect of the gender of the person reading the vignette. There is limited evidence regarding whether there are any differences in support provided for someone of the same or opposite-sex. Swami (2012) randomised 1218 British participants to receive a male or female text-based vignette showing depressive symptoms and found no main effects of participant gender or vignette gender on likelihood of recommending help. However there was an interaction between participant and vignette gender: male participants were less likely to recommend help to the male vignette than the female participants.

5.2 Aims

The present study aims to investigate factors influencing MHFA in a student population and the effect of vignette gender and participant gender upon reported MHFA actions for a videoed role play of a student with depressive symptoms. It is hypothesised that females and students studying degrees which involve contact with mental health-related topics will provide better quality MHFA to the vignette, and be more likely to recommend professional help.

5.3 Methodology

5.3.1 Design

An experimental, quasi-randomised design was used to examine the effect of participant and vignette gender on MHFA. Participants viewed a male vignette or a female vignette based on their month of birth. Allocation to condition was concealed from the researchers and participants. This resulted in four Participant Gender X Vignette Gender conditions: 1) female participant saw female vignette; 2) female participant saw male vignette; 3) male participant saw female vignette; and 4) male participant saw male vignette. The study was administered and data collected through the *SurveyMonkey* survey instrument (Palo Alto, California, USA). No current data were available upon which to base an accurate power calculation, so sample size was based upon power to detect a moderate effect size difference between groups assuming a normally

distributed outcome variable. As a minimum sample size of 64 in each condition is required to detect 0.5 SD difference between scores with $p < .05$ and 90% power, the minimum sample size was set at 128 participants.

5.3.2 Ethical approval

This study was reviewed and approved by the University of Nottingham Medical School Research Ethics Committee (reference D11072013IMH, Appendix 16). Consent to participate in the study was asserted through ticking a box on the first page of the online survey. The terms “psychological distress” and “psychological issues” were used instead of “mental health” and “mental health problems”.

5.3.3 Participants and recruitment

Participants were eligible if they were a registered undergraduate or postgraduate student at one of two East Midlands universities, and were aged ≥ 18 years. Students were invited to take part in a study investigating students’ understanding of psychological distress, which was advertised through email circulation (with permission from Head of School) (Appendix 17), posters and text-based advertisements placed around the university, on social media and university intranet (Appendices 18-19). The advertisements included an incentive (prize draw to win one of ten Amazon e-vouchers, worth between £5 to 20) upon study completion. Study information was provided on the first page of the online survey, which also included an embedded document with further information (Appendix

20). This opportunistic sampling took place in two waves (November-December 2013 and February-April 2014) to avoid exam periods.

5.3.4 Study materials

5.3.4.1 *Vignette conditions*

Participants viewed a video of either a female vignette or a male vignette. The scripts for the videos were based upon written vignettes used in a previous study (Jorm, et al., 2007a), which described a 21-year old person ("John"/"Jenny") with symptoms of depression including persistent feelings of sadness, tiredness, sleeping difficulties, and concentration difficulties. The vignette also mentioned parental concern. For the present study, the vignette script was expanded to include some somatic depressive symptoms and was re-worded for delivery as a first person narrative (see Figure 13 for vignette script). These vignette scripts were made into two videos with identical scripts (except for name), delivered by either a male actor ("Mark") or a female actor ("Emily") speaking directly towards the camera. Both actors were similar in appearance and tone of voice, and were filmed against a plain background with no other audible noise. The video-based vignettes were of similar length (78 and 81 seconds); Figure 14 shows screenshots of the two videos. The videos were hosted on YouTube as 'unlisted' videos (i.e. accessible only to people with the videos' URLs) and embedded into the online survey tool. Both video-based vignettes were reviewed by

Hi my name's Mark/Emily. I'm 20 years old and a student here at the university. Over the past few weeks, I seem to have been feeling unusually sad and miserable. I find myself tired most of the time and I've had trouble getting to sleep at night. I haven't really felt like eating cos I've just not felt hungry, and I must have lost a bit of weight as my clothes feel a bit looser. I can't seem to keep focused on my uni work and I've noticed some of my marks in the recent exams weren't as great as my previous ones. I seem to have difficulties making any decisions and sometimes I struggle with the typical day-to-day tasks – I just seem to be getting these aches in my arms and legs that won't budge. My mum has been asking me whether anything's wrong, and to be honest I'm not too sure myself.

Figure 13. Script spoken by both vignettes in the videos.



Figure 14. Screenshots of the male (“Mark”) and female (“Emily”) video-based vignettes.

NB: Both actors have consented for screenshots to be shown in this thesis.

RM (a psychiatrist with expertise in mood disorders) as representing cases of depression.

5.3.5 Outcome measures

5.3.5.1 *Socio-demographic variables*

Data regarding participants' gender, age, degree course, level and year of study, and country of origin, were collected. For all analyses, participants studying for a degree which was likely to involve substantial contact with topics relating to mental health (nursing, medicine, psychology, sociology and social work) were coded as

studying 'degrees with mental health content'. All other degree subjects were collapsed into a separate category ("degree without mental health content").

5.3.5.2 *Exposure to mental health issues*

Three questions, designed by EBD, ascertained participants' personal experience of mental health issues ("Have you ever experienced difficulties similar to Mark's/Emily's, or other psychological issues?"), experience of close friends and family members ("Have you had any family members or close friends who have experienced difficulties similar to Mark's/Emily's, or other psychological issues?"), and exposure to mental health related media/campaigns within the past twelve months ("Have you seen, read or heard any advertisements or campaigns about mental health issues in the past twelve months?"). These three questions were presented with three possible answers ("Yes", "No" and "Unsure"), and participants could only select one of these answers.

5.3.5.3 *Mental Health First Aid actions and ability to help a friend*

After viewing the vignette, participants were probed about the actions they would take assuming the vignette was a friend through one open-ended question: "If Mark/Emily was your friend, what would you do (if anything) to help him/her?" This question was developed by EBD and CG and guided by previous research (Jorm, Blewitt, Griffiths, Kitchener, & Parslow, 2005). Within the online

survey, the question was presented with a free text-box in which participants could type in their answer. Participants' qualitative responses to this question were rated using a scoring scheme developed by Jorm and colleagues, based on the MHFA action plan (Kelly, et al., 2011). The scheme has been used in several Australian studies (Jorm, Blewitt, et al., 2005; Kelly, et al., 2011; Minas, et al., 2009; Rossetto, et al., 2014; Yap, et al., 2012a). Responses were scored for each of the six MHFA 'ALGEE' components: a score of '0' was given if the MHFA component was not mentioned or an inadequate/unhelpful response; '1' meant a helpful but superficial response; and '2' meant a good response with specific detail. This produces a score ranging from 0 to 2 for each of the six categorical components, and a total MHFA score ranging from 0 to 12. Higher scores indicate better quality first aid.

Participants also self-rated their confidence in helping a friend experiencing symptoms to the vignette from 1 ('not confident at all') to 4 ('very confident').

5.3.5.4 Reliability of coded scores for open-ended MHFA question

Previous publications were used to guide reliability analysis (Minas, et al., 2009; Rossetto, et al., 2014; Yap, et al., 2012a). EBD used Jorm's guidance to practise coding 60 open-ended responses from a previous MHFA study (Kelly, et al., 2011). EBD's coded scores were compared to consensus scores for the same responses, as coded by the three developers of the MHFA course and the described scoring

scheme (Kelly, et al., 2011). Inter-rater reliability was calculated through Pearson's r , comparing EBD's and the consensus' coded scores for each MHFA component and the total MHFA score. Highly significant ($p < .01$) correlations were found for the six MHFA components (*approach the person* $r = .54$; *assess/assist crisis* $r = .79$; *listen non-judgementally* $r = .87$; *give support/information* $r = .57$; *encourage professional help* $r = .80$; *encourage other supports* $r = .85$) and for the total MHFA score ($r = .88$).

A random selection of fifty responses from the present study were re-rated blind by a second rater. Moderate-to-high agreements were calculated for each MHFA component: *approach the person* $r = .54$; *assess/assist crisis* $r = .81$; *listen non-judgementally* $r = .51$; *give support/information* $r = .54$; *encourage professional help* $r = .84$; *encourage other supports* $r = .73$. Agreement for total MHFA score was high ($r = .81$).

5.3.5.5 Stigma towards depression

The Depression Stigma Scale (DSS) (Griffiths, Christensen, Jorm, Evans, & Groves, 2004) consists of two nine-item subscales. The personal subscale measures the individual's personal attitudes towards depression (e.g. "depression is a sign of personal weakness"), while the perceived stigma scale assesses the individual's perceptions about societal attitudes towards depression (e.g. "most people believe that depression is not a medical illness") (Griffiths, Christensen, & Jorm, 2008). Each item is presented with a five-point (0-to-4) Likert scale, ranging from 'strongly disagree' to

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'strongly agree', and each subscale is separately analysed. Total scores on each subscale range from 0 to 36, with higher scores indicating greater depression-related stigma. The DSS has been administered to adults and adolescents (Calear, Griffiths, & Christensen, 2011; Griffiths, et al., 2004; Griffiths, Crisp, Jorm, & Christensen, 2011). In the present study, $\alpha=.81$ was calculated for the DSS-Personal subscale and $\alpha=.80$ for the DSS-Perceived subscale, which is in line with previous internal consistency estimates (Griffiths, et al., 2011). To avoid inducing bias in participants' responses to the open-ended question, the DSS was the final measure administered.

5.3.6 Piloting

To test the quasi-randomisation procedure, its presentation, readability, and accessibility of the vignettes, the online study was piloted and briefly evaluated with eight university students. Based on their feedback, some of the text displayed in the online survey was condensed, and other questions were either shortened or combined to reduce the study's length.

5.3.7 Procedure

All aspects of the study were conducted online. Participants accessed the study through the online survey's URL, which included an invitation to take part in a prize draw (to win one of ten Amazon e-vouchers, worth between £5 to 20) on study completion. The study, which took approximately 20 minutes to complete, used branch programming logic to collect demographic data before quasi-

random allocation which directed participants towards either the 'male vignette' or 'female vignette' video and congruent questions (Appendices 21-22). Participants completed the outcome measures before accessing the final webpage which provided debriefing and information about mental health-related help sources and resources. Participants could enter the optional prize-draw, and were informed the video-based vignettes were actors but their described symptoms were typical of young people experiencing depression. Figure 15 provides a flowchart detailing participant flow in the study.

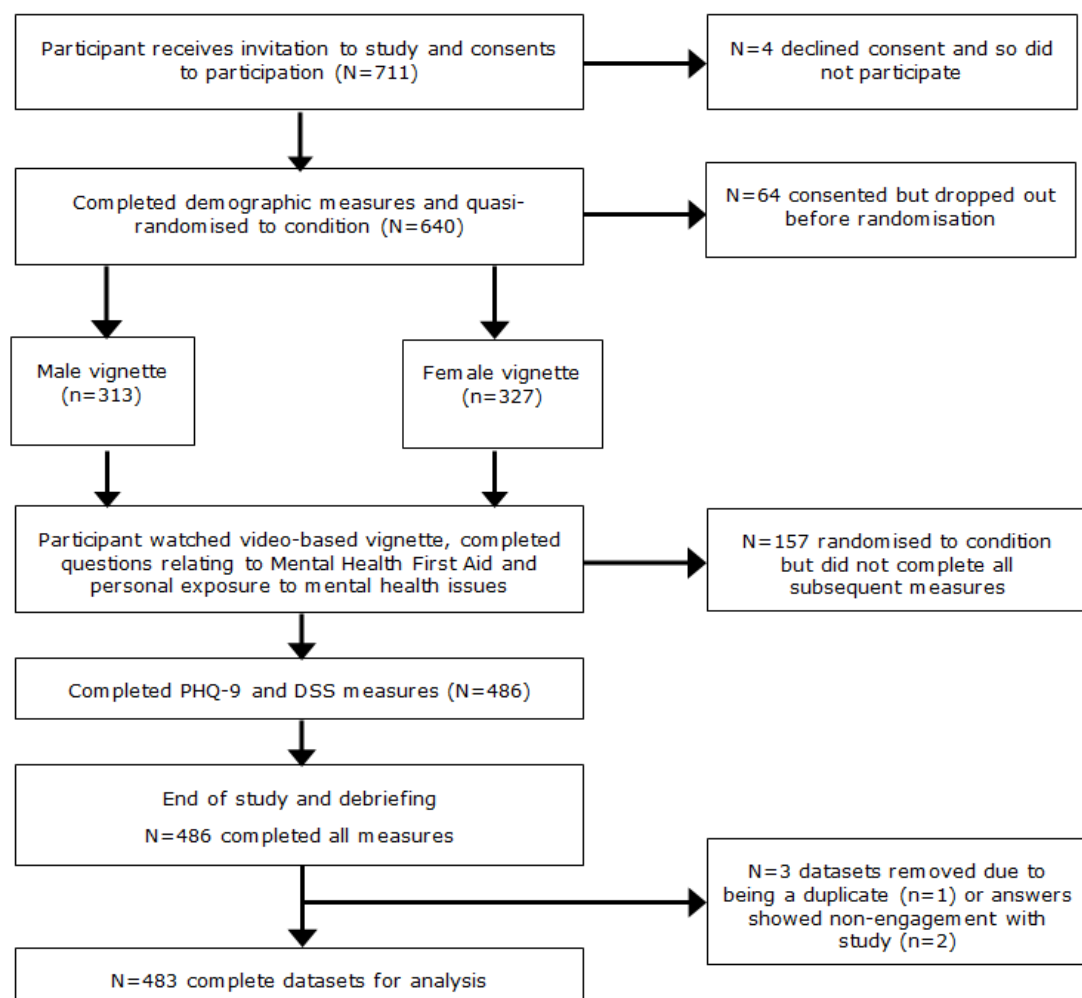


Figure 15. Participant flow through online study.

5.3.8 Statistical analysis

After qualitative responses were coded and finalised, data were analysed using SPSS V.21 (Chicago, IL, USA). Parametric or non-parametric analyses were used depending on the data distribution, P-values $\leq .05$ were considered statistically significant. Any missing data were excluded crosswise in analyses.

5.4 Results

5.4.1 Sample characteristics

A total of 711 students consented to participate, with 211 (29.6%) withdrawing before the end of the study (Figure 15). Overall there were 486 participants who completed the whole study. Three completed participants were removed due to being duplicates (N=1) or showed non-engagement throughout the study (N=2), resulting in 483 full datasets for analysis. Analysis showed no differences in participants' demographic composition and vignette allocation between the non-completers and completers groups. Table 13 provides a breakdown of the sample's socio-demographic composition. The sample's mean age was 21.62 (\pm 4.76) years, with a median of 20 years. Over half (N=273, 56.5%) stated they had experienced a similar issue to the vignette or another psychological issue.

Table 13. Demographic characteristics of the sample, separated by condition.

	All (N=483) N (%)	Saw female vignette (N=244) N (%)	Saw male vignette (N=239) N (%)
Gender			
Male	126 (26.1)	57 (23.4)	69 (28.9)
Female	357 (73.9)	187 (76.6)	170 (71.1)
Age category			
18-21	350 (72.4)	171 (70.0)	179 (74.9)
22-25	75 (15.5)	44 (18.0)	31 (12.9)
26-30	30 (6.2)	17 (6.9)	13 (5.4)
31+	26 (5.4)	11 (4.5)	15 (6.3)
Discipline of study			
Arts & Humanities	97 (20.1)	49 (20.1)	48 (20.1)
Science & Engineering	121 (25.1)	57 (23.4)	64 (26.8)
Medicine & Health Sciences	146 (30.2)	73 (29.9)	73 (30.5)
Social Sciences	117 (24.2)	64 (26.2)	53 (22.2)
Type of degree			
'Degree with mental health content'	161 (33.3)	85 (34.8)	76 (31.8)
'Degree without mental health content'	320 (66.3)	158 (64.8)	162 (67.8)
Year of study			
1st Year	129 (26.7)	82 (33.6)	47 (19.7)
2nd Year	174 (36)	73 (29.9)	101 (42.3)
3rd Year	133 (27.5)	66 (27.0)	67 (28.0)
4th Year +	42 (8.7)	21 (8.6)	21 (8.8)
Level of education			
Undergraduate	436 (90.3)	217 (88.9)	219 (91.6)
Postgraduate	46 (9.5)	26 (10.7)	20 (8.4)
Origin			
Home (UK) student	393 (81.4)	197 (80.7)	196 (82.0)
EU or International student	88 (18.2)	46 (18.9)	42 (17.6)
Personal experience of psychological issue(s)			
Yes	273 (56.5)	137 (56.1)	136 (56.9)
No	180 (37.3)	93 (38.1)	87 (36.4)
Unsure	30 (6.2)	14 (5.7)	16 (6.7)
Experience of family member/close friend with psychological issue(s)			

Yes	295 (61.1)	148 (60.7)	147 (61.5)
No	129 (26.7)	68 (27.9)	61 (25.5)
Unsure	59 (12.2)	28 (11.5)	31 (13.0)
Exposure to mental health media/campaigns in past twelve months			
Yes	280 (58.0)	143 (58.6)	137 (57.3)
No	121 (25.1)	60 (24.6)	61 (25.5)
Unsure	82 (17.0)	41 (16.8)	41 (17.2)

To examine differences between the two vignette gender groups, chi-square and Kruskal Wallis tests were performed. Groups were well matched in terms of demographic characteristics and experience of mental health issues. The only significant difference was for year of study: $X^2(3)=13.93$, $p=.003$. For participants in their first year of study, there were more who saw the female vignette than the male vignette (82 vs. 47). The opposite occurred for participants in their second year: there were more who saw the male vignette than the female vignette (101 vs. 73).

5.4.2 Levels of personal and perceived public depression-related stigma

Scores on the personal stigma subscale ranged from 0 to 28, with a mean of 8.84 (± 5.65) and a median of eight, suggesting low levels of personal stigma. To examine the extent to which demographic and academic factors predicted personal stigma, a multiple regression analysis was performed. This regression found international students ($\beta=.225$, $p<.001$), those studying degrees without mental health content, ($\beta=-.197$, $p<.001$), those without experience of family/friends with a psychological issue ($\beta=-.110$, $p=.01$) and those who lacked exposure to mental health-related

media/campaigns ($\beta=1.68$, $p<.001$) had higher levels of personal stigma: $R^2=.166$, $p<.001$.

Observed scores on the perceived stigma subscale ranged from 0 to 36, with a mean of 20.67 (± 5.34) and a median of 21, suggesting a moderate level of perceived public stigma. As with personal stigma, a multiple regression analysis was performed to explore which factors predicted perceived public stigma levels. This regression found only personal experience of a psychological issue ($\beta=-.136$, $p=.003$) was an independent predictor of lower perceived stigma when other variables had been controlled for: $R^2=.04$, $p=.001$. The sample's endorsement of the items on both subscales are presented in Appendix 23.

5.4.3 Numbers of MHFA actions suggested by sample

The majority ($N=212$, 43.9%) endorsed two MHFA actions, with 122 (25.3%) reporting three, and 40 (8.3%) reporting four actions. Almost a fifth ($N=92$, 19%) reported one MHFA action only, with six (1.2%) failing to report any actions and none reporting all six MHFA actions. The mean number of MHFA actions reported was 2.89 (± 1.52), with a median of three. The most endorsed action was provision of support and information ($N=307$, 63.5%), followed by encouraging professional help ($N=283$, 58.6%) and listening non-judgementally ($N=258$, 53.5%) (Table 14).

Table 14. MHFA actions endorsed by participants, sub-grouped by Participant Gender x Vignette Gender condition.

MHFA action	All (N=483)	Female saw female vignette (N=187)	Female saw male vignette (N=170)	Male saw male vignette (N=69)	Male saw female vignette (N=57)
<i>Approach the person</i>	89 (18.5)	39 (20.8)	28 (16.5)	14 (27.4)	8 (14.0)
<i>Assess and assist with any crisis</i>	8 (1.6)	3 (1.6)	2 (1.2)	0 (0.0)	3 (5.3)
<i>Listen non-judgementally</i>	258 (53.5)	93 (49.8)	102 (60.0)	39 (56.5)	24 (42.1)
<i>Give support and information</i>	307 (63.5)	131 (70.0)	106 (62.4)	35 (50.7)	35 (61.4)
<i>Encourage professional help</i>	283 (58.6)	116 (62.0)	98 (57.7)	35 (50.7)	34 (59.7)
<i>Encourage other supports</i>	152 (31.5)	63 (33.7)	49 (28.8)	19 (27.5)	21 (36.9)

5.4.3.1 Effect of gender and degree upon total number of suggested MHFA actions

To explore the effect of participants' degree subject and participant and vignette gender upon their total number of suggested MHFA actions, Mann Whitney U and chi-square analyses were performed. For this analysis, the coded quality of each action was disregarded: each participant was coded with '0' ("not endorsed") or '1' ("endorsed action") for each of the six MHFA actions, which was summed to produce the total number of suggested actions (ranging from 0 to 6). Participant gender was significant, $Z=-2.125$, $p=.034$. Although both female ($M=2.32 \pm 0.97$, median of two) and male participants ($M=2.11 \pm 0.97$, median of two) reported similar numbers of actions, a larger proportion of female participants were more likely to suggest more MHFA actions. There was no effect of vignette gender upon number of suggested actions. Participants studying a degree with mental health content were more likely to

report more MHFA actions ($M=2.60 \pm 1.03$, median of three) than those studying degrees without mental health content ($M=2.10 \pm 0.90$, median of two); $Z=-5.259$, $p<.001$.

Additional chi-square analyses were performed to explore gender and degree differences in the types of suggested MHFA actions. Female participants were more likely to suggest providing support and information to the vignette (237/66.4% of females vs. 70/55.6% males: $X^2(1)=4.717$, $p=.030$). Studying a degree with mental health content was significantly associated with suggesting listening non-judgementally (105/65.2% vs. 152/47.5% in participants studying degrees without mental health content: $X^2(1)=13.51$, $p<.001$), and encouragement of other supports (64/39.8% vs. 88/27.5%: $X^2(1)=7.43$, $p=.006$). Encouragement of professional help approached significance (104/64.6% vs. 178/55.6% in participants studying degrees without mental health content: $X^2(1)=3.55$, $p=.059$).

5.4.4 Quality of MHFA

Observed total MHFA scores in the sample ranged from 0 to 9 (out of a possible 12) with a mean of 2.89 (± 1.52). The majority of participants received scores of 'one' for each MHFA action, suggesting helpful but superficial responses. Appendix 24 displays the rated quality of actions reported for each MHFA component. To explore the effect of participants' degree subject and participant gender upon their total number of suggested MHFA actions, Mann Whitney U and chi-square analyses were performed. Being female

($Z=-2.30$, two-tailed $p=.021$), studying a degree with mental health content ($Z=-5.54$, two-tailed $p<.001$), being a home student ($Z=-3.28$, two-tailed $p=.001$), having experience of a family member/close friend with a psychological issue ($Z=-3.89$, two-tailed $p<.001$), recent exposure to mental health media/campaigns ($Z=-3.02$, two-tailed $p=.003$), being older ($r_s(481)=.125$, $p=.006$), and having lower levels of personal stigma ($r_s(483)=-.252$, $p<.001$) were statistically associated with higher MHFA scores. A chi-square analysis found year of study was also significant, $X^2=15.81$, $p=.001$; post-hoc Mann Whitney U analyses revealed differences appeared to lie within progression of study. First ($Z=-3.31$, $p=.001$) and second years' ($Z=-2.268$, $p=.023$) MHFA scores differed from third years'. The same was found when compared to participants in their fourth year (first years $Z=-3.02$, $p=.003$; second years $Z=2.14$, $p=.03$). There was no effect of vignette gender upon MHFA scores. Table 15 displays the mean MHFA scores for each variable.

Table 15. Mean MHFA scores for each significant variable.

Variable	Mean MHFA score (SD)	Statistic	P-value
Gender		Z=-2.30	.021
Male (N=126)	2.67 (1.54)		
Female (N=357)	2.96 (1.50)		
Type of degree		Z=-5.54	<.001
'With mental health content (N=161)	3.45 (1.67)		
'Without mental health content' (N=320)	2.60 (1.36)		
Year of study		$\chi^2=15.81$.001
1st Yr (N=129)	2.56 (1.38)		
2nd Yr (N=174)	2.79 (1.46)		
3rd Yr (N=133)	3.22 (1.65)		
4th Yr + (N=42)	3.28 (1.48)		
Origin		Z=-3.28	.001
Home (UK) student (N=393)	2.99 (1.54)		
EU/International student (N=88)	2.43 (1.32)		
Experience of family member/close friend with psychological issue		Z=-3.89	<.001
Yes (N=295)	3.13 (1.58)		
No (N=129)	2.49 (1.30)		
Exposure to mental health media/campaigns in past twelve months		Z=-3.02	.003
Yes (N=280)	3.08 (1.50)		
No (N=121)	2.66 (1.57)		
Vignette condition		Z=-1.56	.118
Saw female vignette (N=244)	2.99 (1.54)		
Saw male vignette (N=239)	2.78 (1.49)		

5.4.4.1 Exploring the effect of gender and degree upon total MHFA score

To explore whether there were any interaction effects between the participant gender, vignette gender and degree of study variables, a three-way ANOVA was performed. For this analysis, gender of participant (male/female), gender of vignette (male/female) and

type of degree (with mental health content/without mental health content) were inputted as the independent factors and total MHFA score as the dependent variable. A main effect was found for type of degree, $F(1, 473)=28.513$, $p<.001$: those studying a degree with mental health content had higher MHFA scores. There were no main effects for participant gender or vignette gender. There was a statistically significant interaction between vignette gender and type of degree, $F(1, 473)=5.252$, $p=.022$. In participants studying degrees with mental health content, there was no difference in MHFA scores between the male vignette ($M=3.48 \pm 1.52$) and female vignette conditions ($M=3.42 \pm 1.80$; $Z=-2.55$, $p>.05$). However for those studying degrees without mental health content, those viewing the male vignette had lower MHFA scores, indicating poorer quality help compared to those who viewed the female vignette ($M=2.45 \pm 1.36$ vs 2.77 ± 1.33 ; $Z=-2.37$, $p=.018$).

Furthermore, there was a statistically significant three-way interaction between participant gender, vignette gender, and type of degree $F(1, 473)=4.192$, $p=.041$). Post-hoc Mann Whitney U analyses solely with participants studying degrees without mental health content found male participants who saw the male vignette ($M=2.23 \pm 1.26$) had significantly lower scores than female participants who saw the female vignette ($M=2.80 \pm 1.35$; $Z=-2.837$, $p=.005$). There were no significant vignette gender and participant gender differences in those studying degrees with mental health content. Figure 16 shows the mean MHFA scores by type of

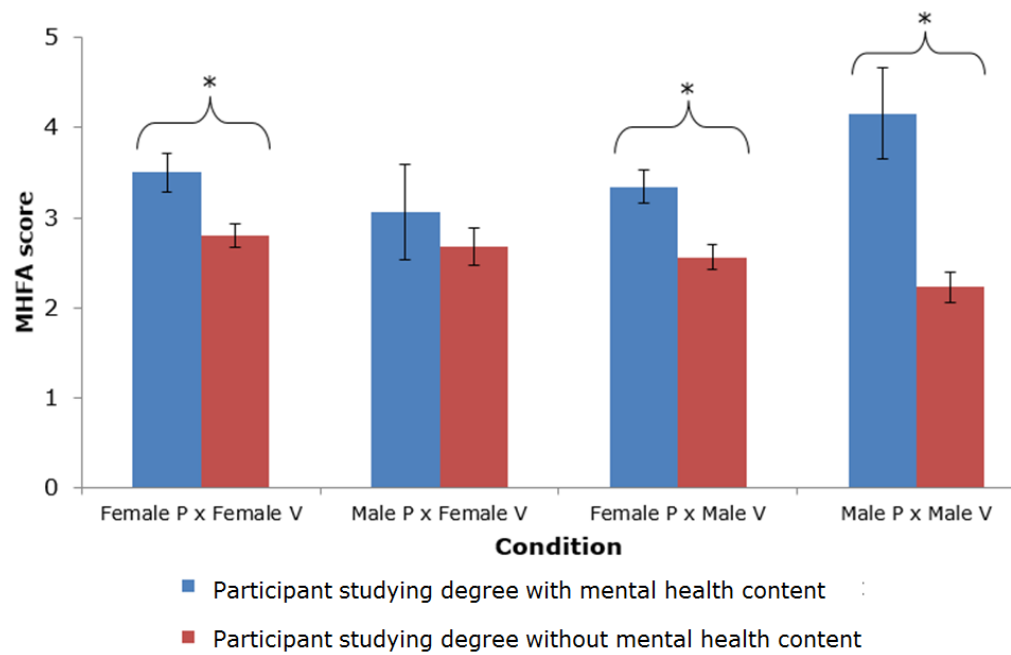


Figure 16. Mean MHFA scores for each condition, sub-grouped by whether participant was studying a relevant degree

NB: Error bars indicate Standard Deviations for each mean score. Bars marked with asterisks (*) indicate a significant difference in MHFA scores between “degree with mental health content” and “degree without mental health content” participants within the Participant Gender x Vignette Gender condition.

Participant Gender x Vignette Gender condition and type of degree studied.

5.4.5 Self-rated confidence in helping a friend with depressive symptoms

Nearly half (N=234, 48.4%) stated they were “fairly confident” in helping a friend, with 30.6% (N=138) stating they were “slightly confident” and 13% (N=63) feeling “very confident”. The reminder

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(7.9%, N=38) reported feeling “not confident at all”. A Spearman’s rank-order correlation found participants’ self-reported confidence and MHFA scores were positively correlated: $r_s(483)=0.23$, $p<.001$. Two Mann Whitney U analyses were performed to explore associations between self-reported confidence, participant gender and participants’ degree of study. Studying a degree without mental health content was associated with decreased self-confidence in helping a friend ($Z=-2.058$, $p=.04$). Of those studying degrees without mental health content, 41.6% (N=133) reported feeling “slightly confident” or “not confident at all”, compared to 33% (N=53) studying degrees with mental health content. There were no differences between the males and females’ level of perceived confidence ($Z=-.968$, two-tailed $p>.05$).

5.5 Discussion

5.5.1 Findings from the present study

Participants in this study proposed a median of three appropriate actions to support a student with symptoms of depression, but the quality of proposed actions was poor as indicated by an overall mean MHFA score of 2.89 out of a possible 12. Only 13% felt very confident about helping a friend with symptoms of depression and 39% expressed no confidence or slight confidence. As predicted, students undertaking degree subjects likely to include mental health-related curricula, had higher MHFA scores and increased self-confidence to help a friend, suggesting that they were better placed

to help other students who had mental health issues. Within this more expert group, the gender of the potential “first-aider” and the gender of the person needing first aid seemed unimportant, as the analyses were not statistically significant. The majority of students in this study were not enrolled on relevant courses, and males studying degrees without mental health content had significantly lower MHFA. Those studying degrees without mental health content also had higher levels of personal stigma towards depression, and higher levels of negative personal feelings about mental illness were weakly associated with lower MHFA scores. Furthermore a significant three-way interaction suggested male participants studying degrees without mental health content were less-well equipped to provide good quality MHFA, compared to female students on the same courses.

5.5.2 Comparison with previous research with university students

The present study aligns with previous findings suggesting those studying degrees which involve contact with health topics have better mental health literacy (Furnham, Cook, et al., 2011; Lauber, et al., 2005). Better MHL may also expand onto students’ MHFA abilities, as findings in the present study showed those studying degrees without mental health content reported fewer and poorer quality actions.

The particularly poor MHFA scores for males studying degrees without mental health contact is a concern as they may be less

aware that young males are more likely to delay or avoid mental health help-seeking and are at more risk for attempting suicide (Ellis, et al., 2013). Students studying healthcare-related subjects (e.g. medicine), psychology or other degrees involving mental health-related curricula may be more aware of the adverse consequences of untreated mental health problems in young males, and may provide poorer quality peer support to counteract young males' non-help seeking behaviour.

Research into students' mental health appears to overlook how discipline of study affects mental health and/or help-seeking behaviour, or focuses on specific subgroups only (e.g. medicine students). Studying a degree involving mental health contact (e.g. medicine, psychology) has been associated with better recognition of mental disorders (Furnham & Carter Leno, 2012; Furnham, Cook, et al., 2011), and could also influence students' MHFA skills and attitudes towards mental health and help-seeking. A recent review suggests student depression is present across a range of courses, and not just in those studying highly-demanding medicine degrees (Ibrahim, Kelly, Adams, et al., 2013). As students studying degrees without mental health contact reported poorer MHFA (particularly males who saw the male vignette) and the findings from Study Two showed students studying Arts & Humanities subjects were more at risk of elevated depressive and anxiety somatology, it may be that students studying non-healthcare degrees may be more vulnerable to experiencing depression, be less able to recognise a potential

mental health problem, and have peers who are less able to provide support. As with the present study, an Australian sample (all aged ≥ 18 years) found the majority of participants who suggested they would provide support and information (47.9% of $N=6019$) to a vignette character were coded with a score of 'one' (Rossetto, et al., 2014). The authors suggest this could be due to people being aware that support is important for people with a mental health problem, but had uncertainties about how to actually provide support. This further adds to the case for improving university students' MHFA skills.

As young people have many inhibiting attitudes about professional help, friends may facilitate and encourage peers in seeking professional help or provide practical help in accessing services (Jorm, 2012). A young person may also delay or not perceive a need for professional help if they feel social support has met their needs (Downs & Eisenberg, 2012). However a young person's beliefs, knowledge and experience of help-seeking could 'transfer' and influence whether they would promote professional help to others, as well as influencing how the friend manages and responds to their mental health problem. Less than half (44%) of a 12-25yr old sample stated they would encourage their peers to seek out help if they were experiencing a mental health problem, even though 77% perceived this action to be beneficial (Yap, et al., 2012a). Jorm and colleagues have used vignettes of hypothetical individuals experiencing depression, depression with alcohol misuse, and

depression with suicidal thoughts (Jorm, Blewitt, et al., 2005; Jorm et al., 2005; Jorm, et al., 2007a; Jorm, Wright, & Morgan, 2007b; Rossetto, et al., 2014). There were no differences in the recommendation of professional help in a sample of young Australians (18-25 years) who were exposed to either a depression-only or depression with alcohol misuse vignette (Jorm, et al., 2007b).

In the present study, only 1.6% stated they would assess and assist risk or crises in the vignette (e.g. assessing suicidal ideation). Other than changing their names, both vignettes in the present study spoke the same script: the vignette did not mention any information which suggested they were experiencing a crisis or harmful behaviours, which may have affected endorsement of MHFA actions. Worryingly, Jorm et al. (2005) found no differences between participants, who either received a depression-only or depression with suicidal ideation vignette, in stating that they would assess the vignette's problem or risk of harm. Further research is recommended in detailing different risks and comorbid health issues within vignettes to student populations, as their type of degree may affect their ability to assess a person's risk.

5.5.3 Strengths and weaknesses

A strength of this study is its use of novel video-based vignettes rather than text-based vignettes, in which the gender of the vignette may be less salient. One previous study investigating MHL in adolescents compared video-based vignettes to their written

counterparts (Marshall & Dunstan, 2013), and this medium does not appear to have been used in MHFA research. The two video-based vignettes used by Marshall & Dunstan (2013) were respectively of a male and female young person; the former was a control condition (describing distress due to relationship problems) while the latter described depressive symptoms. In the present study, the same symptoms were described in both vignettes, allowing us to compare the effect of their gender as well as participants' gender upon MHFA. Using videos allowed vignettes to be delivered in a format familiar to students, and its online delivery made it highly accessible. However a potential weakness of video-based vignette is that there may be other unanticipated differences between the vignettes, such as perceived severity of the symptoms. There appeared to be no evidence of this, as there were no overall differences in MHFA by vignette gender. In addition, we did not ask participants to rate other potential factors influencing their perception of the vignettes, such as perceived attractiveness, likeability, and genuineness; these may be important given the experimental nature of this study.

The vignettes' scripts were sourced from previous research, and do align with diagnostic criteria for depression. A previous study about perceptions of personality traits used short videos showing military recruits answering a question (Oltmanns, Friedman, Fiedler, & Turkheimer, 2004). Within these videos, the authors were cautious about presentation as the person's appearance (e.g. clothing) can act as cues for first impressions, and it is possible that differences in

presentations of the two actors in the present study could have affected participants' responses. Real-life cases of depression are complex in their presentation, and the individual's presentation and other non-verbal behaviours aid others' interpretation of the symptoms and their response (Marshall & Dunstan, 2013). Future research with video-based vignettes may want to standardise the character's appearance if using more than one vignette, or explore how changing the vignette's physical appearance affects participants' responses.

The amount of speech spoken by the vignette, their description and presentation of symptoms may have influenced participants' suggested MHFA actions (Marshall & Dunstan, 2013; Sai & Furnham, 2013). Future research with British students may want to replicate Jorm and colleagues' methodology through randomising participants to receive one of several types of vignette, which present varying degrees of symptom severity and comorbid health issues.

The open-ended question allowed participants to provide their own unprompted responses. This can allow the sample's more important issues be heard, which may not occur with closed questions (Klineberg, Biddle, Donovan, & Gunnell, 2011). This also allows participants to produce their own perspectives, rather than rating researcher-defined helping behaviours (Burns & Rapee, 2006). These qualitative responses were analysed using a scoring scheme developed by experts in MHFA, and to our knowledge this is the first study to have used this scheme in a British population. The process

of conducting inter-rater reliability was limited to only one external rater, but the agreement with a second rater for total MHFA scores was excellent. Future research would benefit from several raters to ensure consensus.

Another strength is that two separate analyses were conducted which respectively focussed on the endorsement of each MHFA action (regardless of rated quality) and the total quality MHFA score. This distinction is important as higher total scores may not necessarily indicate better quality actions (Rossetto, et al., 2014). Furthermore, participants with personal experience of psychological issues, lower levels of personal stigma, recent exposure to mental health media/campaigns and more self-reported confidence about providing support for someone with depression also had higher MHFA scores, which supports the structure of the MHFA coding framework used in this study.

The study recruited far more than the minimal sample size calculated through the initial power calculation, and so it is highly probable that the study was overpowered. Overpowered studies can waste time, money and participant resources (Case & Ambrosius, 2007) and increase the chances of detecting statistically significant between-group differences, leading to Type II errors being made (Hatcher & O'Rourke, 2013). This may lead to incorrect conclusions being made relating to the links between participant gender, vignette gender, and degree/subject of study upon MHFA actions.

A large proportion (N=224) withdrew from the study before completion and although there were no demographic or allocation differences between non-completers and completers, this may have influenced the findings. The use of month of birth to allocate to condition is not truly random and may have introduced unanticipated bias due to potential seasonal variations in, for example, intelligence or educational attainment. However, there was no main effect of vignette gender on MHFA scores, or other variables such as course or level of stigma, and it is a strength of the study that allocation to condition was concealed from researchers and participants prior to consent. This was not a representative sample of students, so it is difficult to generalise the findings to the wider student body. Female participants were over-represented, which appears to be a persistent problem in student-based research. Likewise those with a personal interest in mental health or who have experienced mental health problems may have been more likely to take part. This may have served to inflate the MHFA scores and also potentially mask the extent of differences between genders.

5.5.4 Implications for aim of thesis

This thesis has set out to collect evidence to inform the development of online intervention to improve students' MHL; a component of MHL reflects having the skills to assist others experiencing a mental health problem (Jorm, 2012). As participants, especially males, studying subjects with no mental health-related curricula, reported

poorer MHFA and lower confidence in helping a hypothetical friend with depression, it is clear that these students would particularly benefit from skills training to support their peers. For the intervention, this has implications for including content relating to peer support and guidance for how to support a fellow student with mental health needs.

It is possible that the MHFA course (Kitchener & Jorm, 2002) could be adapted and delivered for university students via e-learning, as British universities frequently use web-based learning platforms (virtual learning environments, VLE) in delivering their courses to students. However as the MHFA course is owned by an Australian organisation, it was not possible to do this within the time-scale of the PhD. A more feasible option is to signpost towards the freely-available MHFA guidelines (see mhfa.com.au/resources/mental-health-first-aid-guidelines). Through Delphi Consensus methodology with healthcare professionals, service users and carers, these guidelines provide 'best practice' for supporting individuals with specific mental health conditions and related health issues, and includes guidelines for depression (Langlands, Jorm, Kelly, & Kitchener, 2008). These guidelines could be translated into a section of the intervention, and adapted to ensure they are student-specific and applicable within the university context. Furthermore, the intervention could be tailored depending on the gender of the user. A portion of the intervention could be specifically tailored for young males, which is developed in consideration of how traditional

masculine norms affect their decisions to talk about their mental health and seek help; for example, framing help-seeking and management in context of maintaining independence and taking self-control (Wyllie et al., 2012).

5.6 Conclusions

As university students often seek out informal help for their mental health, it is important for this population to have sufficient MHFA skills and confidence to be able to support a friend in need. This appears to be particularly true for students who are not studying subjects which involve health or mental health-related curricula, and this sub-group may also have more stigmatising attitudes towards mental health which affects their own mental health, their help-seeking behaviours, and how they would support others experiencing depression. Likewise students need to know, both for themselves and in supporting others, about evidence-based treatments and self-help strategies that can help management of depression, and for them to have the skills, knowledge and confidence to support fellow students in need, so that the person's mental health issue can be resolved and minimise its impact during their crucial period of education.

Chapter Six: Study Five - Development and usability evaluation of the pilot online intervention (“Managing Your Mood Online”)

6.1 Development of the online intervention

The online intervention has been designed as a psycho-educational resource to improve students’ MHL with regards to depression (“depression literacy”) and help students’ self-management of depression. Given its internet-based delivery and focus on depression literacy, the online intervention was initially named “Managing Your Mood Online” (“MYMO”). Its development was informed by the four applied research projects and literature review of help-seeking theory and MHL.

6.1.1 How the four studies contributed towards its development

Study One, a systematic review and meta-analysis of web-based and offline computer-based interventions to improve common mental health outcomes in university students, found evidence supporting their use upon these outcomes. In particular, three student-sampled trials found evidence supporting the use of *MoodGym* in improving students’ depressive and anxiety symptoms. *MoodGym* was the only intervention in this review which was freely-available to the public, and also had supportive evidence from other RCTs. Furthermore, the review demonstrated that anxiety and perfectionism are also common mental health issues that may be

co-morbid with depression. Within MYMO, *MoodGym* and other web-based self-help interventions and mobile/tablet apps were promoted, and information was provided about them. The website emphasised that these were forms of self-help that students may find useful. Within MYMO, there were also two webpages providing education about anxiety/rumination and perfectionism, and how they relate to depression.

Study Two, a one-off online survey exploring depressive, anxiety and hypomanic/manic symptomology and related help-seeking behaviour in the local student population (N=758) identified several important findings. Firstly, 70.2% stated they had experienced an emotional difficulty since university, with 71.1% stating it had some form of impact upon their lives. Of the whole sample, 36.4% screened for 'elevated' depressive, anxiety, or hypomanic/manic symptoms, which was significantly associated with increased functional impairment. Of this 'elevated' sub-sample, 60.9% had not sought professional help. Significant associations were found between screening for elevated symptomology, help-seeking and parental socioeconomic factors. Looking at the findings from the depression symptom measure, sleeping problems were the most reported and common symptom. Finally, informal support from family and/or friends was the most regular help source used by those experiencing elevated symptomology. These findings shaped MYMO in several ways: firstly, statistics about the commonality of symptoms were included in MYMO to demonstrate the prevalence of

depression and to try and influence the users' perceived susceptibility to student depression; secondly, examples of functional impairments experienced by students were provided as guidance, to demonstrate when students experiencing probable depression may want/need to seek out professional help; thirdly, MYMO contained one webpage that provided information about sleeping problems, basic sleep hygiene techniques and other self-help strategies to aid sleep; finally, a webpage was developed for parents of university students. This page provided information about the types of stressors that their child typically goes through at university, and how they can support their child's mental well-being whilst at university.

Many important findings emerged from Study Three, which involved semi-structured interviews with thirty-seven students, who had different lived-experiences of mental health difficulties and help-seeking. In this study, some students expressed uncertainty about assessing the significance or importance of symptoms, and whether symptoms were 'normal' aspects of life or indicated a developing mental health problem for which help was needed. Some also felt that GPs were not able to provide help for students' mental health issues, or had not perceived the GP as being able to assist with the management of mental health issues. There was uncertainty about how exactly GPs and counsellors could help the students experiencing mental health issues, and many stated that they would not disclose personal difficulties to their tutor, unless it was

seriously affecting their academic work. It also emerged that students studying degrees involving mental health-related curricula may have better recognition of a mental health problem and better knowledge about the available sources of help. Finally, participants described many useful and adaptive self-help strategies that they used to manage their mental well-being at university, which included the use of social support. These important findings were incorporated into MYMO's development. A section of MYMO provides information about depression, and guidance about how students can decipher the meaning or significance of depressive symptoms and whether they need help/intervention. Three main help sources (GPs and medication, university-based counselling, and tutors) are described in detail in individual sub-sections of MYMO; each section includes information about how they can help students experiencing depression, addresses salient concerns about these help sources, and identifies how they can be accessed. Information about relevant Nottingham-based and national services was also provided in two webpages. Finally, a section of MYMO was dedicated to describing many types of effective evidenced-based self-help strategies for depression.

Study Four was an experimental study exploring students' abilities to provide MHFA to a hypothetical friend experiencing depressive symptoms. This brief study found students studying degrees which did not involve mental health-related curricula reported lower self-confidence in helping a friend that was experiencing depression,

lower MHFA scores, and were less likely to endorse MHFA actions relating to listening non-judgementally and encouraging other supports. These findings provided support for including a section of MYMO dedicated to how to help a friend experiencing depression. First-aid guidelines for depression, developed by Mental Health First Aid Australia (2008), were adapted within a section of MYMO about how to support a friend. This section also signposted to the MHFA Australia website, so that users could find further information about MHFA for other mental health problems.

In addition to this applied research, a review of the literature (outlined in Chapter One) found that stigmatising attitudes towards mental illness and help-seeking, difficulties in understanding symptoms, concerns about confidentiality and trust in provider, and preference for self-reliance are factors hindering young people's and students' help-seeking. Within MYMO, there is one webpage showing a decisional balance outlining the 'pros' and 'cons' of seeking help (Costin, et al., 2009). Within the section describing the available professional help, attempts are made to address the common barriers to accessing these forms of help. Finally, the self-help section is designed in line with students' preference for self-reliance; this details evidenced-based self-help options.

MYMO has been developed for undergraduate students attending UoN, and may also be applicable to Nottingham Trent University (NTU) students. The website has been designed as a type of 'universal' health promotion intervention for students regardless of

whether they may or may not be currently experiencing depression. Throughout MYMO, there are signposts to other available online resources relating to mental health, seeking help from a professional, self-help and helping someone with depression. This is so that users can choose to access information from other websites and not be reliant on the information presented on MYMO alone, and to contribute to changing their MHL and ability to make an informed choice regarding their mental health.

As noted by Jorm (2012), being mental health 'literate' is not just having knowledge, but having "knowledge that is linked to the possibility of action to benefit one's own mental health or that of others" (p.211). It is anticipated that MYMO can help students' understanding and recognition of depression (both in themselves and others), increase their knowledge to help them make informed decisions about seeking help, increase awareness of professional help and self-help for self-management, and improve their mental health first aid (MHFA) skills for supporting a friend with depression.

6.1.2 Theoretical basis and other considerations

As described in Chapter One, the MHL paradigm is not in itself a theory of behaviour change. A review of six help-seeking intervention trials concluded researchers should be incorporating theory into their interventions to better target help-seeking determinants (Gulliver, Griffiths, Christensen, & Brewer, 2012). MHL's focus on the importance of knowledge, attitudes, and personality factors upon help-seeking means several socio-cognitive

health behaviour and help-seeking theories map onto this concept. The four-stage process model proposed by Rickwood et al. (2005) was the main theoretical underpinning of the present online intervention, but elements from other theories were also applied.

Rickwood and colleagues theorise mental health help-seeking as a four stage process. The first step is personal recognition of a mental health problem, through symptom awareness and their subsequent appraisal as 'normal' or a serious problem. Within Study Two, a large number stated they had experienced an emotional issue and screened for elevated symptomology, but had not sought professional help. It may be they appraised their symptoms as being 'normal' for university students. In Study Three, some participants described uncertainty in appraising the seriousness of symptoms, which may affect help-seeking and self-management. There is content within MYMO describing symptoms of depression, the prevalence of elevated distress in the local population, and how students can appraise symptoms. This content also intends to influence students' understanding of the susceptibility to depression in this population. The model's second stage focuses on the young person's ability to express their need for help. Content within MYMO attempts to normalise and de-stigmatise help-seeking, and provides guidance on how students can talk to professionals about their mental health. The third stage reflects knowledge about available help sources and how to access them. Findings from Study Three found many beliefs and attitudes towards professional help sources

which could affect help-seeking. A section within MYMO is dedicated to describing the available professional help, and considers common concerns to accessing them. The model's final stage addresses positive attitudes and expectation beliefs about help-seeking and treatment. MYMO contains information that describes the process of consulting professional help (e.g. what happens in an appointment), addresses some common concerns and attempts to normalise help seeking. One webpage shows a decisional balance of perceived benefits and drawbacks towards help-seeking; this is adapted from Costin et al. (2009).

Elements of the Cycle of Avoidance model (Biddle, et al., 2007) were applied, as some participants described uncertainty about the importance of their symptoms. Further findings suggested help would only be sought once their mental health problem was having a significant impact (e.g. affecting academic performance), which may suggest students have limited understanding of early intervention. In MYMO, there is information about early intervention and guidance to assist symptom appraisal.

Throughout MYMO's webpages, there are student quotes from Study Three displayed in speech bubbles. These quotes reflect students' experiences of mental health problems, use of professional help and self-help. These were included as role modelling to promote positive attitudes towards these specific aspects and to further iterate the webpage's text. This was influenced by a video-based intervention to improve attitudes towards treatment for mental health problems,

based upon Bandura's Social Cognitive Learning theory (Buckley & Malouff, 2005). The authors state modelling can be 'symbolic' through presenting it as a person's real-life story/experience. Using a 'real-life' model can also induce an emotional component to modelling, which may be more salient due to the prominence of emotions/feelings in mental illness. In a review of alcohol and drug websites, the use of 'life stories' helped personalise the user's experience, emphasised the relevance of the presented information, and created hope through showing successful experiences (Kay-Lambkin et al., 2011). It was hoped that these real-world examples of mental health problems and help-seeking would be normalised to the student audience and reduce perceived isolation.

A website's presentation obtains and sustains the user's attention and engagement, and a 'friendly tone' of delivery may help users' information processing (Berk et al., 2013; Deady, Kay-Lambkin, Teesson, & Mills, 2014); this may be more important for young people with depression given its concentration-associated impairments. The developers of one CBT-based online program for university students, adhered to guidelines about how to present text on websites (Currie, et al., 2010). These guidelines suggest presenting text concisely using short paragraphs and bullet points, avoiding repetition, and use of sub-headings to portion text. These guidelines were applied in MYMO; text, video and imaged-based content was kept condensed on every webpage. Text was presented in an eligible font, with a navigation menu integrated into the left-

hand side of the website. Efforts were made for the language to be appropriate and to minimise the use of jargon.

6.1.3 Hosting the online intervention

LifeGuide is an open-source web-development tool which allows behavioural scientists to create and deliver internet-based behaviour change interventions, without necessarily needing professional IT support (Williams, Yardley, & Wills, 2013). Through logic programming, the tool allows researchers to design interactive internet interventions that can be tailored and delivered through several multimedia formats (Jones, 2013). *LifeGuide* has been developed and predominately used by the University of Southampton to develop theory-based health behaviour change interventions, and could be used to develop mental health-related interventions. It was strongly considered for MYMO's development; however it was not used due to time constraints and the limited number of personnel available for the design process.

Weebly is a website-building and website-hosting service, wherein the user 'drags-and-drops' website-elements (e.g. text, images, buttons) to construct their website. *Weebly* does not require programming skills, creates a sub-domain website (e.g. examplewebsite.weebly.com) and also generates a mobile-version of the website (visit <http://hc.weebly.com/hc/en-us> for more information). *Weebly* offered many similar functions to *LifeGuide* but had limitations, such as the inability to create interactive tasks (e.g. self-assessment tools). For the purposes of creating a pilot

intervention, it was felt that *Weebly* was feasible given the time, financial and personnel constraints.

6.1.4 Designing the intervention's materials

The findings, literature review, relevant theory and design considerations were applied to create a website designed as a 'one-stop' student-appropriate resource for depression-related information. Several visual and auditory multimedia formats are used in computer and internet-delivered interventions to deliver content, which can enhance the audience's comprehension and retention of information and be useful for those with poorer literacy (D'Souza, Blouin, Zeitouni, Muller, & Allison, 2013; Jeste, Dunn, Folsom, & Zisook, 2008; McPherson, Glazebrook, & Smyth, 2001). Videos can be used to model target behaviours and attitudes (Buckley & Malouff, 2005). University students are likely to access websites on a daily basis, and have preferences about website presentation, usability and acceptability (Currie, et al., 2010); therefore it is important for MYMO to be in line with their preferences.

For the present intervention, text, videos and still images were used to convey content, and all content was tailored for local university students. Text-based content was written by EBD in word processing software, which was proof-read by several volunteers. Minor alterations were made based on their feedback. Ten short videos were created for MYMO; five with Professor Richard Morriss (a consultant psychiatrist with experience of treating student patients)

and five with Dr Tim Baker (GP at the University of Nottingham's campus-based practice). All videos were filmed with the speaker talking towards the camera. The five videos filmed with Richard Morriss (2.32-5.04 minutes in length) focused on describing: the symptoms of depression in young people; appraisal of symptoms; why university students are at risk of developing depression; what actions students should take if they suspect depression and self-help strategies. The five videos with Tim Baker (59 to 80 seconds in length) were designed to increase students' awareness about: GPs being relevant help sources; outcome expectations of appointments; how they could talk to their GP about their mental health and what to do if a student was unsatisfied with their GP. The videos were intended to reiterate text-based content.

The pilot version of MYMO consisted of 60 webpages presented over ten sections reflecting aspects of depression literacy, which included: basic information about depression (e.g. symptoms, commonality in students); appraising symptoms and what to do if depression is suspected; available professional help (divided into six sub-sections of different help types); self-help strategies; supporting a friend with depression; information for parents and what to do if experiencing a mental health crisis. Table 16 states the titles of the ten sections within MYMO, alongside the titles of each webpage in each section/sub-section. Figure 17 shows the organisational layout of the pilot website, while Figures 18, 19 and 20 show screenshots of individual webpages/sections.

Table 16. The ten sections within the online intervention and their respective webpages.

NB: Titles marked with an asterisk (*) meant there were no individual webpages within these sections and all content was presented on one webpage.

Title of section <i>(NB: each section has a 'front' webpage which links to its subsections/webpages)</i>	Title of sub-sections	Titles of individual webpages within section/subsection
1. About this website		<i>What this website aims to do</i> <i>How it was developed</i>
2. What is depression?		<i>Symptoms of depression</i> <i>How can I tell if my symptoms suggest depression?</i> <i>What causes depression?</i> <i>How common is depression in students?</i> <i>Challenging beliefs about depression</i> <i>Understanding perfectionism</i> <i>Understanding rumination and anxiety</i>
3. What should I do if I think I might have depression?		<i>How can I tell if I need to seek help?</i> <i>Why is getting help important?</i> <i>Deciding to seek help: pros and cons</i>
4. Who can I seek help from?	4a. Your GP/local doctor	<i>How can a GP help me?</i> <i>What do I say to my GP?</i>

	<p><i>Won't the GP just give me anti-depressants?</i></p> <p><i>Are there any alternatives to seeing a GP?</i></p> <p><i>Local GP surgeries for Nottingham students</i></p>
4b. University counselling services and talking therapies	<p><i>What is counselling?</i></p> <p><i>How do I see a counsellor?</i></p> <p><i>What can I expect at an initial appointment?</i></p> <p><i>How could counselling help me?</i></p> <p><i>Is counselling confidential?</i></p> <p><i>Other talking therapy options</i></p> <p><i>Contact details of university counselling services</i></p>
4c. Your tutor	<p><i>What will happen if I tell my tutor/academic staff?</i></p> <p><i>Are there any other academic staff I could talk to?</i></p>
4d. Other university-based help and services	
4e. Other services based in Nottingham*	
4g. National charities and helplines*	
5. How you can help yourself	<p><i>Sleeping well</i></p> <p><i>Social support from others</i></p> <p><i>Exercise and physical activity</i></p> <p><i>Doing things you like to do</i></p> <p><i>Establishing and sticking to a routine</i></p> <p><i>Relaxation</i></p>

	<i>Online self-help resources and phone/tablet apps</i>
6. Help yourself using MoodGym	<i>What is MoodGym?</i> <i>Does happens in MoodGym?</i> <i>Does MoodGym work?</i> <i>Why might students find MoodGym useful?</i>
7. Help yourself using Mindfulness*	
8. Sunporting a friend with depression	<i>Initial steps for supporting a friend</i> <i>Why might students find MoodGym helpful?</i> <i>Should I encourage them to seek professional help?</i> <i>What else can I do to help?</i> <i>What should I do if they don't want help?</i> <i>Taking care of yourself</i> <i>Further information</i>
9. Information for parents*	
10.In a crisis?*	

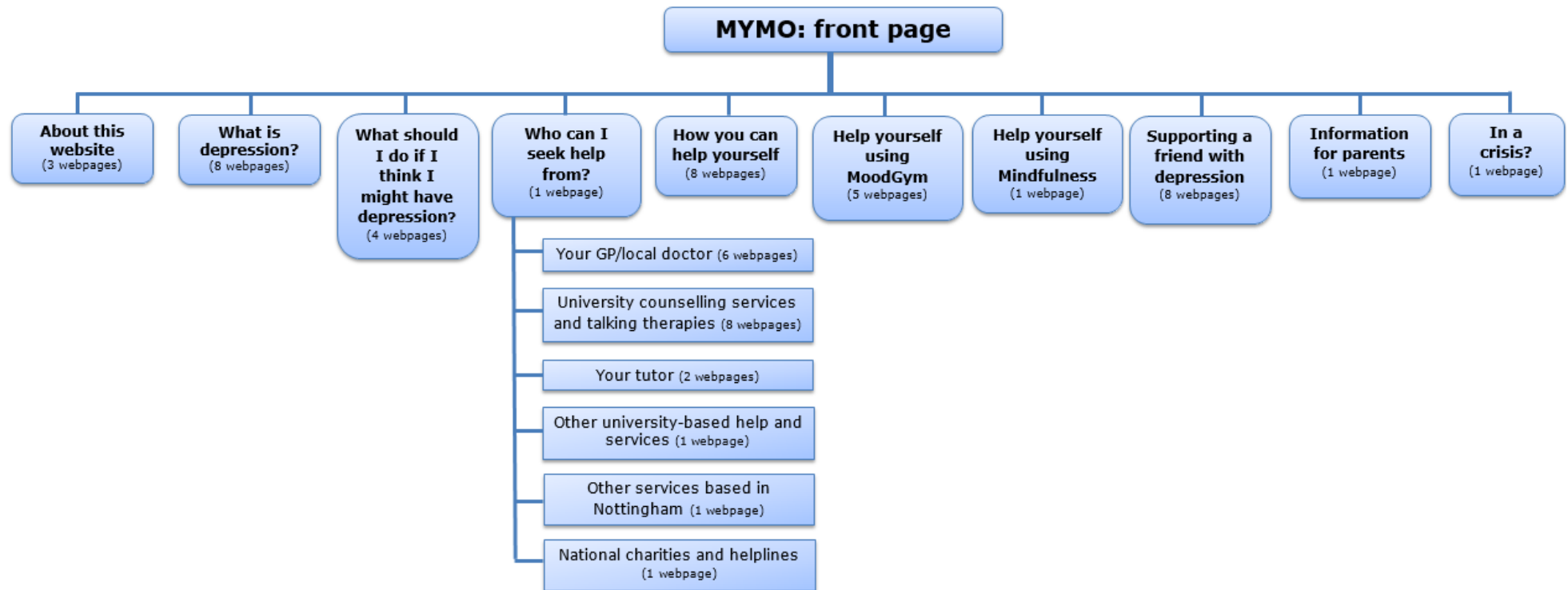


Figure 17. The organisational layout of the pilot version of MYMO.

Managing Your Mood Online (MYMO)

MYMO: front page

About this website

What is depression?

What should I do if I think I might have depression?

Who can I seek help from?

How you can help yourself

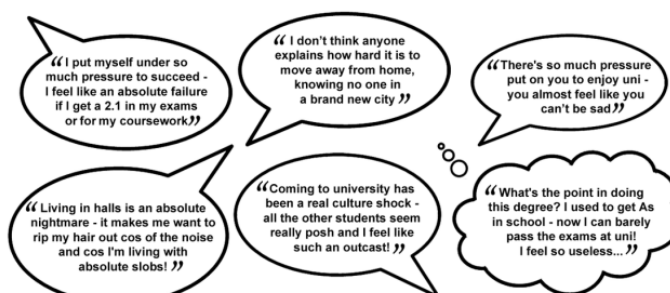
Help yourself using MoodGym

Help yourself using Mindfulness

Supporting a friend with depression

Information for parents

In a crisis?



Many of the quotes you see in these speech bubbles are common feelings and experiences felt by many university students. Many students adapt and cope with these feelings and emotions, but for some coming to and being at university can contribute towards an episode of depression. This website is designed to educate university students - like yourself - about:

- The signs and symptoms of depression
- How to recognise an episode of depression and figure out whether it requires help
- Who you can seek professional help from
- Self-help strategies you can use yourself to help manage your depression
- How you can support a friend with depression

What is depression?

What should I do if I think I might have depression?

Who can I seek help from?

How you can help yourself

Help yourself using MoodGym

Help yourself using Mindfulness

Supporting a friend with depression?

In a crisis? Need help now?

Information about how this website was developed can be found in the 'about this website' section.



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Figure 18. Screenshot showing MYMO front/home page.

NB: The left-hand side menu was present on all webpages. Text in pink denotes them as hyperlinks to other sections or external websites.

Managing Your Mood Online (MYMO)

MYMO: front page

About this website

What is depression?

What should I do if I think I might have depression?

Who can I seek help from?

How you can help yourself

Help yourself using MoodGym

Help yourself using Mindfulness

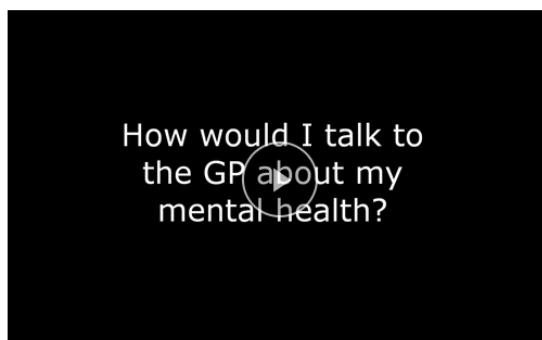
Supporting a friend with depression

Information for parents

In a crisis?

What do I say to the GP?

Students and young people often have difficulties in figuring out what they want to say to their GP. They can have difficulties using language and terms related to mental health, or be scared that by saying they're experiencing some issues means that they have a diagnosis. In this video, a GP provides some guidance about what you can do to help talk about your feelings in an appointment with your doctor ([PDF transcript of video](#)):



At the beginning of your appointment, your GP will typically ask you what has brought you to them today. Here are some further tips to help you prepare for an appointment with your GP:

- Think about what you want to say beforehand
- It might help for you to write down what you want to say and any questions you want to ask the GP – so that you don't forget during the appointment
- You can write down what symptoms you have been experiencing, and how long you have been experiencing them for
- Tell them you have been feeling low and think you might be experiencing symptoms of depression – your GP may ask you questions about your daily living and things that have been going on lately in your life to see if there is anything that might have triggered your feelings. Regardless of if there is or isn't a trigger to your depression, it doesn't lessen the problem or change the potential treatment options.
- This can be helpful in understanding your present situation
- Ask someone you trust (e.g. a friend) to come along with you – they can come with you for support and wait in the waiting room or come into the appointment with you
- Be honest when your GP asks you questions – this can be scary but will help the GP in providing advice and information relevant to your situation

“When I finally went to the GP, I was so anxious – I went from seat to seat in the waiting room and had no idea what to say to the GP. All I knew was that I couldn't manage my depression by myself with final exams looming! It all came out in a bit of an emotional outburst once I got in but my GP was excellent - she took me seriously and was very sympathetic and non-judgmental. She also prescribed me anti-depressants. Going to see the GP and having the prescription was the best thing I did to beat my depression”

Kimberley
(3rd Yr Neuroscience student)



- [DocReady](#) is a website designed to help young people prepare for a GP visit, and helps them understand what to expect in an appointment/consultation if they are concerned about their mental health. It also allows you to put a checklist together of things you might want to say to your GP.
- The [Mental Health Foundation](#) has also published a guide providing advice about how to talk to your GP about your mental health.

Back: [How can a GP help me?](#)

Next: [Won't the GP just give me anti-depressants?](#)



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Figure 19. Screenshot of the 'What do I say to my GP?' webpage within the 'Your GP/doctor' sub-section.

Managing Your Mood Online (MYMO)

MYMO: front page

About this website

What is depression?

What should I do if I think I might have depression?

Who can I seek help from?

How you can help yourself

Help yourself using MoodGym

Help yourself using Mindfulness

Supporting a friend with depression

Information for parents

In a crisis?

Supporting a friend with depression

As one in four people will experience a mental health problem of some kind, it is likely we will all come into contact with someone who is experiencing a mental health issue at some point in our lives. It may be a family member, boyfriend or girlfriend, friends you have at home or at university, or students on your course or living in your accommodation. Likewise, university students usually talk to their friends and peers if they are experiencing personal problems, and may prefer to speak to their friends before deciding to seek out help.

The guidelines presented on this section of the website are a shortened version of those available from Mental Health First Aid Australia, and are based on opinions from experts, users of mental health services, carers and professionals working in mental health. They were developed to provide recommendations for how people can help someone who may be experiencing depression. The original guidelines can be [downloaded here \(PDF file\)](#) and also be found on the [Mental Health First Aid Australia website](#). The website also provides guidelines for supporting people experiencing other mental health issues, such as anxiety and eating disorders.

Initial steps for supporting a friend

Should I encourage them to seek professional help?

What if they don't want help?

Further information

How can I best support someone?

What else can I do to help?

Taking care of yourself




Figure 20. The front webpage of the “Supporting a friend with depression” section.

NB: The seven buttons link to the different webpages within this section.

6.2 The importance of usability testing of online interventions

Interventions should be tailored to their target population, and be accessible and appealing to potential users (Currie, et al., 2010). Designing interventions in line with the target population's needs allows them to use it productively, and poorly designed healthcare-related technology can affect users' adaptation and utilisation of them (Breakey et al., 2013; Jaspers, 2008). The term 'usability' has arisen from human-computer interaction research (Yen & Bakken, 2012). Five overarching criteria are considered important to understand a developed product's usability (Nielsen, 1993):

1. *Learnability*: the product/system should be easy to learn for the user.
2. *Efficiency*: the product/system should be well structured. Once the user has learnt how to use it, they should be able to use the system productively.
3. *Memorability*: the ability to use product/system should be easy to remember, so user can return to it in future without having to relearn it.
4. *Error recovery*: only minimal errors should emerge when using the product/system, and the user should be easily able to resolve errors.
5. *Satisfaction*: the product/system should be pleasant to use and should be likeable to the user.

Usability testing is a form of evaluation: potential end users (representative of the target population) actively engage with a developed product (e.g. intervention), and evaluate it in line with the usability criteria (Al Ayubi, Parmanto, Branch, & Ding, 2014; Kaufman et al., 2003). Usability testing is typically undertaken through an iterative “design-evaluation-redesign” process, wherein evaluation is conducted with a representative sample, with changes made after each iteration cycle; this is undertaken until the product is considered highly usable and acceptable (Kushniruk, 2002; Riiser, Løndal, Ommundsen, Sundar, & Helseth, 2013). The majority of usability issues can be identified with a small sample of representative end users (Breakey, et al., 2013). Usability testing has seen increased use in evaluating healthcare-related systems, and has been used to explore usability of computer-based information systems (Kushniruk, 2002; Yen & Bakken, 2012), electronic pain-management diaries (Stinson et al., 2006), web-based interventions for improving mental health outcomes (Currie, et al., 2010; Smith, Egbert, Dellman-Jenkins, Nanna, & Palmieri, 2012), and health behaviours and disease management (Ammann, 2011; Breakey, et al., 2013; Joshi, Wilhelm, Aguirre, Trout, & Amadi, 2013; Riiser, et al., 2013). The acceptability of the intervention’s content and information is also important; if users do not perceive the content as tailored or relevant to their needs, the intervention will be perceived as incompatible and irrelevant (Ammann, 2011). Data from usability evaluation include identifying usability problems, users’ suggestions for improvements and

exploring the acceptability of content; this can be used to modify the product either for the next usability testing stage or prior to a trial (Kushniruk, 2002).

Usability testing is performed through a range of methodologies in both laboratory and field conditions, including focus groups, observation, and semi-structured interviews (Jones, 2013). Qualitative and quantitative data are collected to analyse video, audio, text and numerical data (Kaufman, et al., 2003). Usability feedback can provide important information about the user experience and help appraise whether interventions can achieve their desired goals (e.g. improving health outcomes) (Riiser, et al., 2013). A popular usability testing method for web-based interventions is 'think aloud' methodology (Jaspers, 2008). This involves providing users with a problem-solving task in using the web-based intervention whilst observed by the researcher; the user is asked their feelings and thoughts about the intervention's content, and their data is recorded through note taking, audio or video recordings (Joshi, et al., 2013). While this gathers rich data, it can be quite time consuming. Remote usability testing has been used for 'distance' evaluation of internet-based systems, which can include gathering quantitative and qualitative data about website use and evaluation through online surveys (Ammann, Vandelanotte, de Vries, & Mummery, 2013; Kushniruk, Patel, Patel, & Cimino, 2001). The usability of internet interventions is often neglected, or only explored within a trial as a secondary outcome (Jones, 2013).

Several authors of internet-based interventions have performed usability testing to refine their intervention before a trial (Breakey, et al., 2013; Currie, et al., 2010; Riiser, et al., 2013). Pre-trial usability testing could mean these interventions may produce better outcomes in formal trials, as they have been re-designed with the usability needs of representative end users.

6.3 Aims of usability study

The aims of the intervention are to:

- Increase students' mental health literacy (MHL) applied to depression (hereafter called 'depression literacy') in order to provide better support for themselves and their peers
- Support students' self-management of depression through promoting mental health help-seeking, use of professional help, self-help and online evidenced-based programs
- As a consequence of these two aims, the intervention thereby aims to improve depressive symptoms and enable effective help-seeking in university students.

As described above, it is important to explore initial evaluation of the intervention prior to a full trial upon these described aims. The present study aimed to explore the pilot online intervention's (a website) usability, acceptability and understandability through providing potential end users with access to the website and gaining evaluation of their user experience and opinions about its content.

Post-testing, this allows us to edit the website to incorporate users' feedback about usability and content, in order to make it more appealing to the target population.

This chapter describes a brief study conducted to explore the intervention's acceptability and usability with a sample of representative end users, alongside discussion of the intervention's developmental process.

6.4 Methodology for usability study

6.4.1 Sample and recruitment

'Think aloud' methodology was not used for several reasons. It took considerable time to develop the online intervention; the prototype website was completed towards the end of the Spring academic semester. Given this, timing constraints may have provided limited opportunity for representative end users to participate in a face-to-face study. Considering this and the online recruitment and methodology used in the Studies Two and Four, a 'remote' usability study protocol was developed. The study aimed to recruit a minimum of fifteen participants, which was slightly bigger than in previous studies (Breakey, et al., 2013; Currie, et al., 2010). The remote usability testing did not allow for direct observation or follow-up questions, and so a larger sample was used to help counteract potentially less-intensive qualitative data.

In May-June 2014, advertisement posters were placed around two University of Nottingham (UoN) campuses, and text advertisements were placed on UoN intranet and Twitter. Potential participants were asked to contact EBD or input their email address into an online survey for further study information (Appendix 25). As this was a usability evaluation with no mental health-related measures, ethical approval was not required. Participants were provided with study information, consented to participation and could withdraw at any time.

6.4.2 Measures

6.4.2.1 *Demographics and technology use*

Information about participants' gender, age, course and year of study were collected. Participants rated their use and perceived competency of using computerised technologies and the internet, and their use of the internet for health-related purposes (but not related to their degree). Questions were based on previous research into usability evaluation and students' health-related internet use (Escoffery, et al., 2005; Horgan & Sweeney, 2010; Kuosmanen, Jakobsson, Hyttinen, Koivunen, & Välimäki, 2010).

6.4.2.2 *Usability evaluation*

A questionnaire was developed to evaluate the usability of the pilot version of MYMO (Appendix 26). This was divided into sections which evaluated user satisfaction, its perceived usefulness, content and comprehension, presentation, ease of navigation and errors, perceived relevancy and credibility, and potential future use. Fifty-

four Likert scale items and open-ended questions collected a mixture of quantitative and qualitative responses. Questions were based upon usability literature and evaluation studies (Al Ayubi, et al., 2014; Breakey, et al., 2013; Cristancho-Lacroix et al., 2014; Faulkner, 2000; Kuosmanen, et al., 2010; Nielsen, 1993; Stinson, et al., 2006). The System Usability Scale (SUS) (Brooke, 1996) is a simple and reliable measure which provides brief feedback about a product's usability. The SUS consists of ten positive and negative items reflecting usability, alongside a five-point (0-to-4) Likert Scale ranging from "strongly disagree" to "strongly agree". Overall scores range from 0 to 100, with higher scores indicating higher perceived usability (Ng, Lo, & Chan, 2011). The SUS has been applied to health-related interventions, including computer and internet-based interventions to improve mental symptomology (Levin, et al., 2013; Rose, et al., 2013). In the present study, the wording was changed to reflect the type of system (i.e. a website) being evaluated.

6.4.3 Procedure for usability testing

All study aspects were conducted online: there were no face-to-face interactions between EBD and participants. Participants were provided with seven day access to MYMO, in which they were asked to explore it as they would normally explore websites, and to consider how other Nottingham students and someone with depression might experience the website. No problem-solving tasks were given.

Participant consent was asserted through signing an electronic consent document. All participants were given an anonymised ID code, which was entered into both surveys that participants completed. The first survey took approx. 10 minutes to complete, and collected information about participants' demographics, use of technology and the internet, and use of the internet for health-related purposes.

After completing the first survey, participants were provided with seven-day access to MYMO, along with brief instructions about the website's layout (Appendix 27). Participants were asked to consider MYMO's presentation, user-friendliness, its readability and relevancy for Nottingham students. They were given an optional document wherein they could record their opinions, and could transfer their comments into the subsequent evaluation survey. There was no set amount of time participants needed to access the website, but were asked to access every webpage at least once. Reminder emails were sent three and five days after initial access (Appendix 28). Seven days after access, participants were emailed the usability evaluation online survey: this took approx. 30-45 minutes depending on the depth of participants' answers. Participants were thanked for their time through a debriefing webpage and reimbursed with a £10 e-voucher.

6.4.4 Data analysis

Quantitative data were analysed through descriptive statistics only; no statistical tests were performed. Similar to Study Four, responses

to the open-ended questions were coded using deductive content analysis (Elo & Kyngäs, 2008). Participants' responses were categorised into distinct *a priori* categories reflecting aspects of usability.

6.5 Findings

6.5.1 Sample demographics and background

Nineteen participants were recruited (see Table 17 for sample characteristics), ranging from 18 to 28 years old (mean 21.47 ± 2.67) and all were full-time students. All reported frequent or daily use of computers, laptops or tablet devices, and the internet. Ten used their computer/laptop, smartphone and tablet devices to access the internet, with the other nine either using their computer/laptop only or also used their smartphone.

Seventeen reported regular or occasional use of the internet for health-related purposes, which included using it to: find out information about physical, sexual and mental health issues and conditions; find information about help available and treatments; access self-help and online support groups and aid self-management. Many reported benefits, including its ease and privacy of access, inexpensiveness, usefulness, the wealth of information, and talking and sharing ideas with peers with similar health issues. Just over half ($N=10$) reported at least one adverse or negative outcome, which included: online content can cause negative

Table 17. Characteristics of the nineteen participants who reviewed the website.

	N
Gender	
Male	3
Female	16
Faculty of study	
Arts & Humanities	2
Science & Engineering	7
Medicine & Health Sciences	3
Social Sciences	7
Year of study	
1st Year	6
2nd Year	4
3rd Year	6
4th Year	3
Level of study	
Undergraduate	17
Postgraduate	2
Fee status	
Home	17
International	2
Perceived competency in using computers	
'Very' competent	11
'Quite' competent	8
Perceived competency in using the internet	
'Very' competent	14
'Quite' competent	5
Estimated daily internet usage	
1-to-3 hours	4
3-to-5 hours	5
5-to-8 hours	9
8-to-10 hours	1
Use of internet for health-related purposes	
Frequently	8
Occasionally	9
A little	1
Never	1

feelings, worry and health anxiety; concerns about reliability or generalisability of information; conflicting content; and difficulties comprehending seriousness of personal health issue. Some suggested finding out information about available help did not necessarily influence their decision to seek out help services.

6.5.2 Participants' fidelity of website access

All participants accessed MYMO during the seven day period. The majority (N=17) stated they managed to access and read all or some content on every webpage at least once. Participants self-reported spending 60 to 420 minutes on the website: nine self-reported ≤ 2.5 hours use, with the remaining ten reporting ≥ 3 hours use. The mean estimated time spent accessing MYMO was 186.31 (± 107.50) minutes, with a median of 180.

6.5.3 General impressions and opinions about the website

All participants felt the website was 'quite' (N=2) or 'very' useful (N=17), and either "liked" (N=8) or "really liked" (N=10) using the website, with one stating a strong dislike. "Liked" and "disliked" aspects of the website were coded into three categories reflecting the website's content, presentation and navigation; these are presented in Tables 18 and 19. In terms of content, several participants liked the signposting to other relevant online resources/websites (N=7), that the website provided enough information about depression (N=6), the evidenced-based nature of the content (N=3), the content's clarity and appropriate tone and

language (N=3) and the 'supporting a friend with depression' section (N=3):

"[I liked] the amount of information for sufferers, friends and parents - love the fact that all sorts of people can use this site for help. The links to local services and constant mention of the university, student, and Nottingham, gave it more personal feel too, as so many larger websites for health can be very general and almost overwhelming in that sense" (Participant 2, female, first year Science student)

Two participants suggested the "About this Website" section may be less useful, but it was felt potential users needed information about the website's development. Five users stated they liked the use of student quotes, and felt these would help potential student users feel 'less alone' if they were experiencing depression, and provided further understanding of content. Five participants felt videos helped reinforce the website's message and provided alternative delivery of text. Participants described several aspects that they 'disliked' within the website (see Table 19). The most common 'disliked' aspects related to too much information/text presented on some webpages (N=4), the homepage's presentation (N=4) and feeling the website's colour scheme and/or layout was not appealing or engaging (N=5). Participants provided suggestions for website changes including adding additional content within some webpages and changing the text font.

6.5.4 Perceived usability of the website

SUS scores ranged from 60 to 95, with a mean of 83.9 (± 9.14) and median of 87.5. This suggests MYMO was highly usable.

6.5.4.1 *Ease of navigation, learnability and error rate*

The majority (N=18) felt it was easy to navigate themselves around the website and between webpages/sections (N=17), and felt that the website's navigation and layout was consistent across pages/sections (N=17). All stated it was "somewhat" (N=1) or "very easy" (N=17) for them to remember how to use the website, suggesting they did not need to 're-learn' anything to navigate through MYMO.

The majority (N=14) stated they did not have any navigational difficulties. Six participants left comments relating to problems with website navigation: the interactive drop-down menus were over-sensitive and 'flickered'; there may have been too many webpages or sub-sections within each section, or not enough consistency across sections; some hyperlinks were broken, incorrect, or did not open in a separate browser window/tab; and the use of 'back' and 'next' buttons may have suggested the webpages needed to be accessed linearly, or were not needed given the left-hand side navigation menu. Five accessed MYMO on more than one type of device, and two stated that in the simplified, mobile-friendly version of MYMO, they could not read some text presented it did not fit on the devices' screen.

The sample were asked how easy or difficult they felt it would be for a student to find certain information. Many stated it would be “very” (N=13) or “somewhat easy” (N=4) for students to find out information on the website, with two stating it would be neither easy nor difficult. Fifteen participants explained why they would find it easy to access specific information, which included: the website being split into clearly labelled logical sections/sub-sections; the clear navigation menu; individual webpages being titled; and the simplicity of navigation and being presented in a familiar format.

Table 18. “Liked” aspects of the website.

Content	Presentation or design	Navigation
<ul style="list-style-type: none"> • Signposting to other relevant websites and resources (N=7) • Provided enough information/content about depression and its management (N=6) • Evidenced-based content (N=3) • Individual sections of website: self-help (N=1), professional help available (N=1), deciding to seek help (N=1) • Tailored to students attending Nottingham universities (N=2) • ‘Supporting a friend with depression?’ section (N=3) • Website covered several aspects of depression (i.e. from recognition of symptoms to self-management) (N=1) • Could be used by different populations (i.e. students with and without depression, parents) (N=1) • Content was concise (N=1) 	<ul style="list-style-type: none"> • Presented clearly and used appropriate tone and language to deliver information (N=3) • Use of student quotes in speech bubbles (N=5) • Use of videos helped reinforce content or provided alternative delivery of text (N=5) • Colour scheme (N=1) 	<ul style="list-style-type: none"> • Easy and clear navigation (N=4)

Table 19. Drawbacks of intervention and participants' suggestions for improvements and additions.

Drawbacks of the website and possible suggestions for improvement
<p><i>Content-related issues:</i></p> <ul style="list-style-type: none"> • Need to add or extend information on following webpages/sections: <ul style="list-style-type: none"> ○ 'In a Crisis?' – how to respond to a friend experiencing a crisis (N=1) ○ 'How you can help yourself' – information about distraction methods (N=1) ○ 'What help is available?' – more information about benefits of talking therapies (N=1); no information about potential waiting times for talking therapy services (N=1); more information about anti-depressants as webpage is too vague (N=1); information about services available to mature students or those studying at Sutton Bonington (N=1) ○ 'Help yourself using Mindfulness' section (N=1) ○ 'Herbal treatments' webpage: requires additional text about liaising with HCP if considering using it (N=1), and interaction effect with contraceptive pills (N=1) ○ 'Supporting a friend' – more information about how to care for yourself if supporting a friend ○ 'University-based help': may need to be described in more detail about what specific 'internal' services are available (N=1) • Information about whether a diagnosis of depression could affect students' course retention, career options/plans and fitness-to-practice issues (N=1) • Information about legal aspects of diagnosis, e.g. equal opportunity polices, disclosing depression to employers (N=1) • Sections about other mental health problems which students may be less knowledgeable about (e.g. schizophrenia) • A bit too much information or text presented in certain webpages (N=4) • Video delivery was not engaging or too long in length (N=2) • "About this Website" section may be less useful for students (N=2) • Possible integration of an online forum into the website (N=2)
<p><i>Presentation or design issues:</i></p> <ul style="list-style-type: none"> • Text and background colour: may be difficult to read text (N=2) • Student quotes in speech bubbles were difficult to read (N=1); these could be expanded further through webpages showing detailed "student stories" (N=3) • Homepage: too much content or needs to be more engaging (N=4) • Layout 'boring'/not engaging or not colourful enough (N=5) • Large blocks of text on some webpages (N=3) • Ensure images do not obstruct text, and use bullet points to clarify

- text (N=1)
- Videos were somewhat bland, not engaging, with some too long in length (N=3)
- Front webpage needs something central for users to focus on (N=2)
- Text fonts need to be consistent throughout website (N=1)
- Website's name may need changing to reflect 'depression' rather than 'mood' (N=1)

Navigation issues:

- Navigation menu on left-hand side and at bottom of individual webpages may be confusing (N=1)
 - Hyperlinks which direct to other MYMO webpages/sections need to be opened in separate windows/tabs (N=1)
 - Navigation menu (on left-side) is temperamental (N=1)
 - Limited interactivity (N=1)
 - Use of hyperlinks: need to ensure they work (N=1)
-

One participant commented it might be difficult as they felt the navigation side-menu did not include all aspects of the website. Additional feedback about the website's navigation is presented in Tables 18 and 19.

6.5.4.2 The website's visual appearance

Participants' responses suggest the pilot website's visual presentation was liked but requires development. The majority either 'agreed' or 'strongly agreed' with statements relating to the website making a good first impression (N=16), liked the use of the multimedia (N=16), felt the website had a clear presentation (N=17), and the text/fonts were readable (N=17). However agreement with three other statements was more variable. Teal, black and white colours were used throughout MYMO, with dark text and content presented on a white background and a minimal number of different fonts. While twelve participants liked the colours, the remainder either disliked them (N=4) or were

unconcerned either way (N=3). There was also variability in the preferences of the website's presentation. Ten participants felt its presentation was to their liking, with three 'strongly' liking its appearance; the remainder were unconcerned either way (N=3) or disliked its appearance (N=3).

These personal preferences were likely to have impacted upon the website's perceived appeal, as only twelve felt its appearance was appealing. Seven participants suggested a different colour scheme involving brighter colours would help its appearance, and the number of fonts used should be minimised and be easy to read. Given the website's focus upon depression, it may be insensitive to incorporate vivid colours, but it would be possible to use brighter colours which are not too 'cold' but appropriate for the content. Furthermore, programming algorithms could allow users to directly change the website's appearance (e.g. different text-background contrast, font size) to allow better accessibility for those with visual impairments or different preferences.

6.5.4.3 *The language and content of the website*

Participants felt positive about MYMO's content, with the majority stating it was understandable ('strongly' or 'somewhat' agree: N=18), and that the language used was familiar and understandable to university students (N=18), the language was appropriate and sensitive (N=17), and the participants could understand the website's purpose (N=16). The majority (N=16) liked the use of multimedia, but there was variability in whether participants felt the

multimedia aided understanding of information; ten 'strongly' and seven 'somewhat' agreed with this statement. It may be the non-text media was not of sufficient quality for users.

All participants felt the website's content was reliable and accurate, and that it was useful to signpost to other relevant resources. All (N=19) felt there was no content which could potentially have a negative impact upon end users, but five did suggest content which may not have been relevant for local students. Three participants suggested the 'Information for Parents' section had potential if parents were directed towards this website. Comments from two other participants suggested the videos needed to be more concise (N=1), and concerns with promoting *MoodGym* and mindfulness given the commitment needed to engage with them (N=1). Sixteen participants felt the website would be engaging to the target audience, but there was diversity about the website's ability to engage users.

Twelve participants reported that there was too much text presented on some of the webpages, with three stating too much text on all pages, while the remaining four felt text presentation was adequate. Thirteen participants explained their answers: 'what is depression?', 'what causes depression?', 'common beliefs about depression' and 'information for parents' were webpages identified by more than one participant as being too lengthy. Three participants suggested text could be made more readable through breaking it into smaller blocks or using other multimedia (e.g.

images) to separate text, using bullet points or bolding words/sentences, in order to be more attentive when reading. Fourteen participants felt the website contained a suitable number of webpages and sections. Five users, who felt there were too many webpages, suggested some could be combined, with two suggesting the 'professional help' section contained too many webpages.

Although this was not a trial, participants were asked whether the website had any impact upon their own depression-related knowledge. Fifteen participants stated some impact, which included improved knowledge about: symptoms (N=5) and thought patterns (N=2) associated with depression; *MoodGym* (N=3), mindfulness (N=3) and self-help (N=5); professional help available in Nottingham, the university and nationally (N=4); other relevant websites (N=2); and skills to help a friend experiencing depression (N=3). Increased awareness about perfectionism, how to respond to a depressive episode, and the prevalence of student depression, were mentioned by individual participants. This suggests the website has potential to educate and improve students' depression literacy.

Participants provided free-text responses relating to website content they felt should be changed or added; these are displayed in Table 19. Several participants stated they felt specific information was missing. Three participants suggested the speech-bubble quotes could be expanded further through providing "student stories"; one user suggested videos may be useful as they would show students speaking openly about their mental health.

One female participant stated the webpage showing reasons for seeking and not seeking help needed changing as it suggested "*actual drawbacks to seeking help*". This webpage was written as a decisional balance tool. University students hold many perceived beliefs, both valid and inaccurate, about the meaning of seeking help for a mental health problem. It was hoped this would provide students with a better understanding of why seeking help may be beneficial for someone experiencing depression.

6.5.4.4 *Additional opinions about 'supporting a friend' section*

To explore students' views of the freely-available MHFA Australia guidelines for depression (2008), participants were asked their opinions about the 'supporting a friend with depression' section. All participants felt positive about this section's content, felt it was relevant, and would be helpful and useful to students in helping them assist a friend. Comments from nine participants suggested they understood the importance of this section, such as to improve their ability to approach a friend and know what they can do to help. Two participants with personal experience of depression particularly saw this as helpful; they felt this section could help inform them how either they, or their friends, could best approach and talk to someone in need:

"I genuinely would have found this kind of resource incredibly useful when a group of [my] friends were supporting a school friend at uni in another city - we found it very difficult to find out what was available near her, and to judge when and who it might have been

appropriate to contact on her behalf when she was reluctant to find help, and how best to support her without putting our own health at risk. More generally, all the advice seems to be compassionate and understanding, easy to understand and relevant"

(Participant 22, female, first year Medicine student)

Two participants suggested this section needed information about how to recognise depression in others, more advice on self-care for the 'helper' and information about how to appraise a potential crisis requiring intervention. One participant suggested the 'taking care of yourself' webpage was "offensive" but did not explain why. It was important to include content reflecting self-care when supporting someone as it may also cause distress to the individual. Young people may be unsure of their own boundaries when supporting someone with depression, and not be aware that they can also seek out professional help and advice for their friend's depression.

6.5.4.5 Perceived relevance, credibility, and potential future use

All participants felt the website's content was evidenced-based, with almost all (N=18) perceiving the website as trustworthy and relevant to Nottingham-based university students. Additional information may be needed about who developed the website and their expertise, to improve the website's perceived credibility. Feedback from five participants suggested signposting to external websites/resources, the embedded videos, age appropriateness of content, and wealth of information, helped the website's perceived credibility. One participant felt the use of student quotes helped the

website feel 'familiar', while another suggested the website needed information that was relevant for mature students.

When asked to rate their potential future use of the website once it was finalised and available, four participants stated they would "definitely" use it, while six said they would "probably" use it. One stated they would not use it. The remaining eight suggested future use would depend on circumstances and whether they felt a personal need for it. Comments from five participants suggest that they would be likely to use it for themselves or to signpost it to others. One participant suggested they would not need to revisit the website as they have understood all its content. All participants stated they were "extremely likely" (N=9) or "quite likely" (N=10) to recommend the website to friends and other students.

6.6 Discussion

This brief usability study provided a representative sample with access to the pilot version of a website designed to improve depression literacy, help-seeking and self-management of depression in university students. This study represented the first evaluation stage of an iterative process to improve the website's usability and acceptability to local students. The online intervention has been developed as a form of '*universal*' health promotion, meaning it is important for the website to be usable for students with and without depression. Nineteen potential end users provided a wealth of generally positive feedback, and shows the importance

of presentation and understandability in developing interventions for specific populations. Their feedback suggests the intervention's content is valid and understandable, but there are several visual and presentation factors to address in the next re-development stage.

Almost all participants stated the website's navigation was fluid and simple, and there did not appear to be any dominant usability issues. Navigational issues emerged when non-laptop devices were used to access the website, and there was difficulty with the interactivity of the website's navigation menu. The next development stage will need to improve MYMO's functionality to improve its user-friendliness across different devices.

Participants' responses suggested the website was useful, usable, and contained sufficient and reliable content about depression and its management, which was relevant and tailored towards university students in Nottingham. Many participants provided suggestions of further information to add or to revise the present content. Within the website, there were ten short videos with two healthcare professionals. Noticeably, the videos recorded with the psychiatrist were poorer quality. Plans to make similar videos with a university-based counsellor were not fulfilled. For the next development phase, it may be beneficial to re-record some videos, and to make short videos with other relevant professional help sources. Several participants provided positive comments about the student quotes within MYMO; making videos of 'student stories' may also be a good

idea to further model examples of students which users could potentially identify with.

The website's presentation was clear, its content considered to be understandable, and the language was considered appropriate and in line with the focus on depression. Evaluation suggests changes need to be made to improve the website's appeal. Several users felt too much text was presented on some webpages, and the website's colour scheme was not overly engaging. Using a different colour scheme was suggested by some, but considered cautiously in line with the website's depression-related content.

Feedback about the section outlining first aid guidelines for depression suggested participants found these highly useful. Study Four found local university students have low MHFA, and the developed intervention has potential to improve students' MHFA and reduce stigmatising attitudes towards mental health and help-seeking. Web users who downloaded the freely-available MHFA guidelines reported these were useful in supporting someone in need (Hart, et al., 2012). Students may benefit from promotion and awareness of the MHFA guidelines for different mental disorders.

Ten participants suggested they would be likely to use the website in future, while eight suggested their use would depend on personal need. Understandably participants' website use would depend on their circumstances, and their intentions may not translate into actual website use. It may be better to investigate and evaluate

students' website use once it has been live for a period of time and publicised to the local student population.

6.6.1 Strengths and limitations of present study

This study contributes to previous research by demonstrating the importance of performing usability testing in developing internet-based interventions (Breakey, et al., 2013), and how it can help improve the accessibility of interventions to their target audience. Making interventions user-friendly and in line with the audience's usability preferences can help them achieve their aims; modifying MYMO will hopefully contribute to improvements in students' depression literacy, self-management and help-seeking. However we will not know if these aims will be met until website evaluation and development is complete and a formal trial is performed.

Recruitment was potentially problematic as it was performed during students' examination period, and so they may not have been attentive to advertisements or be able to participate. Participants were from a range of faculties, but females were over-represented. The majority of participants had used the internet for health-related purposes, and so were likely to have preferences about how health information is presented online. These factors, along with the remote nature of the study, meant the sample may have been more critical about the MYMO's content and presentation. Collecting qualitative usability feedback through an online survey meant follow-up questions could not be asked. This limited their opinions: some participants provided brief answers, and it would have been

beneficial to have asked them to explain their responses. Not being directly observed may have meant participants felt more able to be honest in expressing their opinions about the website.

A limitation about the sample's representativeness was that their experience of current and past depression and mental health help-seeking was not assessed. It would have been beneficial to know whether those who had experienced depression had any differing opinions about the website. A few participants did disclose personal experiences and diagnoses of a mental health problem, and may have had a better understanding of the website's content, or be able to provide more suggestions for improvements based on their experiences.

6.6.2 What next for the online intervention?

This brief study has clearly identified some problems relating to the website's presentation. Some of these problems were due to constraints of the website-building tool (*Weebly*); we could not include interactive activities and had limited presentation options. This, along with participants' suggestions, is something to address in the next development stage. To help improve the website's usability, presentation and interactivity, a website developer and designer should be brought in to develop a professional version of MYMO. Furthermore, better quality videos could be recorded with other relevant professionals, and show case studies of students with depression. Further development will be dependent on funding and time constraints, and we need to liaise with The University of

Nottingham about their interest in promoting this website to students.

Apart from inputting participants' suggestions and solving the usability problems that emerged from this evaluation, the next version of MYMO could be further tailored to students. Users could be directed to different versions of the website based on their gender, their level of study or their academic faculty. In Study Two, participants studying Arts & Humanities degrees were more likely to screen for elevated depressive and anxiety. It may be reasonable to 'stream' students studying certain degrees to specific content (e.g. help available within their faculty), so that it is more tailored towards their needs. Furthermore, university-based healthcare professionals could evaluate the website to ensure its content is appropriate both for themselves and for students.

Chapter Seven: Overall discussion

7.1 Summary of findings

Study One, a systematic review and quantitative meta-analysis of 17 student-sampled trials of website and computer-based interventions for common mental health problems, found support for their use in improving short-term depression, anxiety and stress-related outcomes. This effect was most supported in intervention vs. no-treatment control comparisons, with findings from a small number of trials also supporting these outcomes when compared to attention placebo or comparison intervention. This review also supported the use of *MoodGym* in three student samples.

Study Two, a cross-sectional quantitative survey with students from two Nottingham-based universities, found elevated depressive, anxiety and (hypo)manic symptomology was present in a third of the sample, and the majority of participants with elevated symptomology had not sought professional help for their mental health. Informal sources of help were commonly used by those with elevated symptoms and those who self-reported emotional difficulties (regardless of their screening outcome). Screening for elevated symptoms was associated with studying an Arts & Humanities-based degree and lower level of maternal education.

Study Three expanded upon these findings through one-to-one semi-structured interviews with 37 university students, who described a range of mental health-related experiences (e.g.

diagnosis, help-seeking), and provided a rich insight into the student experience. Four overarching themes emerged from these interviews, which related to how students understood their mental well-being, the impact of student life upon their mental health, concerns and challenges to seeking professional help, and their coping strategies and management of mental health difficulties. Important findings within sub-themes suggested students experienced uncertainty when assessing the importance of symptoms of mental distress and whether they required intervention; that students studying certain degrees of study may have better knowledge and understanding of their mental health; concerns and unawareness about how GPs, counsellors and tutors could help; adaptive self-help strategies were frequently used by the students in the sample; and social support from friends was valued in helping manage their mental health difficulties. Within the online intervention, relevant quotes sourced from participants in this study were used to role model positive experiences of understanding mental health problems, help-seeking, using self-help and peer support.

Given the importance of friendships in managing students' mental health, Study Four used an experimental approach to explore the university students' mental health first aid (MHFA) actions for a hypothetical male or female friend experiencing symptoms of depression. Participants' qualitative responses to an open-ended question were quantified using a coding scheme developed by MHFA

experts. This study's findings suggested students undertaking courses which had a mental health component (e.g. medicine, psychology) were more able to provide helping behaviours to a student experiencing a mental health issue. Those studying other courses reported poorer MHFA skills and male students studying courses without a mental health component had poorer MHFA, particularly if faced with a male student with emotional difficulties. This is concerning since young males with depression are less likely to seek professional help, and findings from Study Two demonstrated that Arts and Humanities students are more likely to screen for elevated depressive symptomology. The findings suggest students who are more likely to experience elevated symptomology would also be less likely to receive better quality support from their friends. Given this, there is a need for an accessible intervention to improve knowledge about depression and appropriate help-seeking, both for the student themselves and in supporting their peers.

The results of the four studies contributed towards the development of a pilot, evidence-based, psycho-educational online intervention to improve depression literacy and depression self-management in Nottingham-based university students. An initial usability study suggested the pilot intervention contained sufficient content relating to depression, its treatment and management, and was readable and acceptable to student users, but that its presentation and delivery needed some revision and would benefit from investment.

7.2 The evidence base behind the online intervention

The evidence base for the intervention came from several sources. Firstly, Study One provided evidence showing that website and computer-based interventions have potential to improve depression, anxiety and stress outcomes in university students. Three trials within this review provided further evidence about the use of *MoodGym* (a freely available CBT-based online program) in student populations, and this was promoted within the developed online intervention. Secondly, through designing, conducting and analysing three studies with local university students, evidence was gathered reflecting their profile of depressive and anxiety symptomology, the impact of student life upon mental well-being, their perspectives about seeking help for a mental health problem, and their abilities to support a friend experiencing depression. Importantly, 60.9% of students screening for elevated depressive, anxiety or (hypo)manic symptomology had not sought professional help, and along with findings from the other two studies, suggests this population needs education about what help is available and how to access it. The developed intervention included signposting and promoting existing relevant help services and resources, which were sourced through reviewing and contact with the local area's services. Likewise, other website sections (e.g. self-help for depression, MHFA guidelines) were based upon existing evidence.

Thirdly, it was important for the intervention to be developed using appropriate theory, as this has often been overlooked in MHL

interventions. As it had been used in previous MHL interventions, Rickwood et al.'s four-stage model of help seeking (2005) was used to guide development of the present intervention. Elements of the Cycle of Avoidance (CoA) theory of non-help-seeking (Biddle, et al., 2007) and social cognitive learning theory (Bandura, 2004) were also applied. The intervention's content was highly tailored towards Nottingham-based university students, and usability feedback from nineteen students suggests there was sufficient relevant content presented within the website.

The developed pilot intervention has several advantages to students, including it being a discrete, 'one-stop' resource for student-relevant information about depression, and is presented in a non-linear fashion, meaning users can pick and choose which sections they wish to access in order to gain specific information. Feedback from Study Five suggested the intervention's content was valid and understandable, and the majority of participants stated it provided them with some previously unknown information about depression. This suggests it has the potential to improve students' depression literacy. However the tool used to develop the pilot intervention had many restrictions and constraints, meaning it could not be further tailored to students of a particular gender or studying a specific degree, and interactive activities could not be integrated into the intervention. It appears the method of delivery, rather than its content, would benefit from investment. This, along with other suggested changes from participants, will need consideration in the

next stages of re-developing the intervention, where it is hoped web development professionals will be hired to produce a more usable and presentable website for local students.

7.3 Strengths and limitations of the thesis

The strengths and limitations of each of the five studies conducted for this thesis have been described in detail within their respective chapters, and will not be repeated in this overall discussion.

7.3.1 Reflections on using mixed-method approaches

Both qualitative and quantitative approaches to collecting data were used, both separately and in combination, within the five research projects to explore student mental health and usability of the pilot intervention. Mixed-methods approaches have become increasingly applied in physical health and mental health services research, as quantitative methods alone may not adequately explore people's illness experiences (Dures, Rumsey, Morris, & Gleeson, 2011; Palinkas, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2011). There is not a single definition of what constitutes a mixed-method approach (Dures, et al., 2011), and so there are many types of design which fall under the 'mixed-methods' umbrella. There are many reasons why researchers may choose to combine qualitative and quantitative perspectives in mental health research, including triangulation (using one type of data to corroborate findings from other types of data), complementarity (using different methods to

explore related questions), and expansion (e.g. using qualitative methods to explore findings from analysed quantitative data) (Palinkas, et al., 2011). For this thesis, triangulation and expansion were reasons for using mixed-methods to explore students' mental health. Each study were separately analysed and debated, and were then considered in how they compared and contrasted to each other. Some findings from the interview-based study and the quantitative online survey did align, such as associations between studying specific degrees and help-seeking behaviour, and provided further understanding of the impact of student life upon their mental health.

The mixed-methods approach was beneficial for the thesis, as it allowed different types of data and perspectives to be considered in exploring the complex nature of the research topic; it permitted investigation of causal relationships between variables, and also placed attention upon listening to students 'voices' and self-described experiences relating to their mental health. Qualitative data can produce findings which support or contrast those found in quantitative data, or might not otherwise emerge in solely quantitative approaches (Dures, et al., 2011). Using a mixed-methods approach is not without problems, as it can be difficult to synthesise data from the two approaches given their different assumptions (Rawlings, 2012).

A methodological issue which may affect the robustness of the mixed-method approach were the constraints from the ethics

committee about the language that could be used within Studies Two and Three. Not being permitted to use language directly relating to mental health may have affected the explicitness of questions and the ability to deeply explore the topic.

7.3.2 Further reflections on the pilot intervention

The developed intervention used applied research with its target population to inform its content, and so may be better tailored to the target population's mental health needs. Although the three studies with local university students produced fruitful findings, it is possible that these findings were not applied sufficiently enough to the developed intervention. Likewise, the online intervention's content was not reviewed or evaluated by professionals working in student health (other than the secondary supervisor). The time and resource constraints, along with demands of developing the intervention's content, meant a freely-available tool was used to build the preliminary website, rather than having it professionally developed. This tool was restricted in the functions it could provide, and meant it was not possible to integrate interactive activities which required user participation (e.g. mood assessments, user worksheets). Within internet-based interventions, interactive activities require the user to actively engage with the intervention, and may have a stronger effect upon outcomes, compared to passive psycho-educational interventions in which users read information off the screen. The pilot intervention may not be fully

representative of the end product, and the described limitations need addressing in the next stage of development.

7.4 Implications and next steps for future research

This thesis represents the initial 'development' stage of the development-evaluation-implementation process for developing complex interventions (Craig et al., 2008). The intervention was developed and delivered in a sophisticated online format and the usability study validated its content, but found the website's presentation requires investment. The next stage of development needs to explore the potential for commercialising the intervention, either through the University of Nottingham or another organisation. This would involve liaising with the university about their interest in the intervention, and also exploring whether other relevant professionals (e.g. university-based GPs and counsellors) would be interested in using or promoting the website. Furthermore, the online intervention may benefit from providing further information about the relationship between alcohol use and depression, given students' heavy alcohol consumption and use of alcohol to self-medicate their mental health problems (Bewick, Mulhern, et al., 2008).

In providing an intervention partly designed to promote mental health help-seeking to local students, we also need to consider the services providing help and treatment for depression. Limited resources within university-based counselling services and

healthcare are an issue, meaning students who seek help may not be able to receive immediate treatment or receive less-favourable treatment options. Encouraging help-seeking in students may be troublesome if the help provider cannot urgently meet their mental health needs. Furthermore, the intervention's content needs to be evaluated by student healthcare-related professionals, in order to ensure its content about help sources is accurate and appropriate for students, and addresses concerns professionals have about students' mental health and help-seeking.

7.4.1 Designing a pilot trial of the intervention

Logically, the next stage of the research is to proceed onto the next stage of the development and evaluation process, as outlined by the MRC (Craig, et al., 2008). Once the online intervention has been fully developed and finalised, it would be subject to a pilot randomised controlled trial (P-RCT). This trial would both explore its effects upon outcomes reflecting students' help-seeking, self-help usage and depression management (as important outcomes of MHL), but would also explore the efficacy of recruitment and response rates, participant attrition and retention, and identify a suitable sample size and effect sizes for a formal full trial.

The intervention has been designed as a form of universal mental health promotion (i.e. for university students with and without depression), and it is hoped it will also be used by students who want to support a friend with depression. The eligibility criteria would need to reflect this, and would likely mean there would be no

symptomology-based criteria (e.g. elevated depressive symptomology) to participate in a trial. As previously conducted by Costin et al. (2009), the sample could be categorised by their current symptomology into threshold categories of “low” and “elevated” depressive symptoms, or whether they had current or past episodes of depression.

Previous RCTs of interventions to improve young people’s mental health help-seeking have focused on assessing participants’ current symptomology (e.g. depression, anxiety), attitudes towards help-seeking and specific sources of help, knowledge and beliefs about help available and treatment effectiveness, help-seeking intentions and help-seeking behaviour, knowledge relating to depression and anxiety (e.g. ability to recognise symptoms), and mental health-related stigma (Buckley & Malouff, 2005; Costin, et al., 2009; Gulliver, Griffiths, Christensen, & Brewer, 2012; Gulliver, Griffiths, Christensen, Mackinnon, et al., 2012). It would be reasonable for a pilot RCT of the present intervention to include many of these outcomes. These constructs are assessed through several well-known measurements, including the Attitudes Towards Seeking Professional Psychological Help Scale (ATSPPHS) (Fischer & Turner, 1970), General Help-Seeking Questionnaire (GHSQ) (Rickwood et al. 2005), Actual Help-Seeking Questionnaire (AHSQ) (Rickwood, et al., 2012), established measures of mental symptomology, and rating statements from Jorm et al.’s MHL research. The ATSPPHS is a popular measure, but does not assess the stigma that individuals

attach to the help-seeking process. As stigmatising attitudes towards mental health problems and help-seeking itself are major barriers to accessing help (Gulliver, et al., 2010), the Self-Stigma of Seeking Help Scale (SSoSHS) (Vogel, Wade, & Haake, 2006) would be a relevant additional measure to administer to participants. The trial of the present intervention could also assess participants' attitudes towards, intended use and actual use of self-help. Furthermore, participants' MHFA skills in supporting a friend with depression would also need to be assessed. This could be done using the same coding scheme described in Study Four. Finally, one conclusion from Study One was that researchers should administer qualitative measures, in order to explore users' perceptions of the intervention and its effect upon outcomes. This should be included in a trial, in order to explore whether changes in pre-post quantitative data reflect participants' own perceptions of the effect of the intervention.

Short-term follow-up assessment is prevalent in trials of help-seeking interventions, with many studies administering post-intervention outcomes at four weeks or less (Gulliver, Griffiths, Christensen, & Brewer, 2012). Limited follow-up is a methodological issue common across all types of internet-based interventions, and requires consideration in a trial of the present intervention. Given its design as a 'universal' form of prevention, MYMO's users will vary in their present mental health needs. It is hoped the intervention improves students' ability to appraise their own depressive

symptoms and understand when professional help is needed, and so help-seeking behaviour may not occur until symptoms are present. Symptoms may not occur in short-term follow-up, and so it may be better to assess factors which could influence future help-seeking (e.g. recognition and appraisal of depressive symptoms, help-seeking stigma, self-efficacy).

Performing long-term follow-up may be difficult for the present intervention given its transient population; at follow-up, it is possible students may no longer be at university, or have other more pressing demands. Using online data collection and contacting participants through their permanent (non-university based) email address may be two ways to retain participants and collect follow-up data. The long-term effectiveness of any intervention is also important to its stakeholders; in this case, the university will need data about this intervention's positive impact upon the mental well-being of their students. For a trial, administering a battery of measurements at baseline, post-intervention, at three-month and six-month follow up would be ideal to explore the effects of the intervention, and additional longer-term assessment would also be ideal to explore its effect upon those who did not have depressive symptoms at baseline.

7.5 Conclusions

This thesis presents an applied approach to the development of an online intervention for improving depression literacy in Nottingham

students, and represents the initial stage of development and evaluation. The three studies performed with local students explored their current depressive symptomology, factors relating to how the university environment affected their mental well-being and influenced their understanding of mental health, and the quality of their helping actions in supporting a friend with depression. Along with professional development of the online intervention, further research with university students is recommended to explore other facets of MHL, in order to ensure the developed intervention addresses their gaps in depression-related knowledge and aids their recognition and management of depression during this period of education.

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Review

Computer-Delivered and Web-Based Interventions to Improve Depression, Anxiety, and Psychological Well-Being of University Students: A Systematic Review and Meta-Analysis

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Abstract

Background: Depression and anxiety are common mental health difficulties experienced by university students and can impair academic and social functioning. Students are limited in seeking help from professionals. As university students are highly connected to digital technologies, Web-based and computer-delivered interventions could be used to improve students' mental health. The effectiveness of these intervention types requires investigation to identify whether these are viable prevention strategies for university students.

Objective: The intent of the study was to systematically review and analyze trials of Web-based and computer-delivered interventions to improve depression, anxiety, psychological distress, and stress in university students.

Methods: Several databases were searched using keywords relating to higher education students, mental health, and eHealth interventions. The eligibility criteria for studies included in the review were: (1) the study aimed to improve symptoms relating to depression, anxiety, psychological distress, and stress, (2) the study involved computer-delivered or Web-based interventions accessed via computer, laptop, or tablet, (3) the study was a randomized controlled trial, and (4) the study was trialed on higher education students. Trials were reviewed and outcome data analyzed through random effects meta-analyses for each outcome and each type of trial arm comparison. Cochrane Collaboration risk of bias tool was used to assess study quality.

Results: A total of 17 trials were identified, in which seven were the same three interventions on separate samples; 14 reported sufficient information for meta-analysis. The majority ($n=13$) were website-delivered and nine interventions were based on cognitive behavioral therapy (CBT). A total of 1795 participants were randomized and 1480 analyzed. Risk of bias was considered moderate, as many publications did not sufficiently report their methods and seven explicitly conducted completers' analyses. In comparison to the inactive control, sensitivity meta-analyses supported intervention in improving anxiety (pooled standardized mean difference [SMD] -0.56 ; 95% CI -0.77 to -0.35 , $P<.001$), depression (pooled SMD -0.43 ; 95% CI -0.63 to -0.22 , $P<.001$), and stress (pooled SMD -0.73 ; 95% CI -1.27 to -0.19 , $P=.008$). In comparison to active controls, sensitivity analyses did not support either condition for anxiety (pooled SMD -0.18 ; 95% CI -0.98 to 0.62 , $P=.66$) or depression (pooled SMD -0.28 ; 95% CI -0.75 to -0.20 , $P=.25$). In contrast to a comparison intervention, neither condition was supported in sensitivity analyses for anxiety (pooled SMD -0.10 ; 95% CI -0.39 to 0.18 , $P=.48$) or depression (pooled SMD -0.33 ; 95% CI -0.43 to 1.09 , $P=.40$).

Conclusions: The findings suggest Web-based and computer-delivered interventions can be effective in improving students' depression, anxiety, and stress outcomes when compared to inactive controls, but some caution is needed when compared to other trial arms and methodological issues were noticeable. Interventions need to be trialed on more heterogeneous student samples and would benefit from user evaluation. Future trials should address methodological considerations to improve reporting of trial quality and address post-intervention skewed data.

<http://www.jmir.org/2014/5/e130/>

J Med Internet Res 2014 | vol. 16 | iss. 5 | e130 | p.1
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KEYWORDS

systematic review; meta-analysis; intervention; universities; students; mental health; depression; anxiety; health promotion

Introduction

Depression and anxiety are common mental health problems experienced by university students [1]. A recent review reported a 30.6% mean prevalence rate of depression in students [2] and a cross-sectional survey reported 17.3% prevalence of clinically-significant psychiatric caseness in a UK student sample [3]. Being in higher education is associated with many stressors and transitional events, and students fall within the age range when common mental health problems are at their developmental peak [4]. Of students who screened below the threshold for anxiety and depression at entry to university, 9% were above the threshold for depression and 20% for anxiety 18 months into their course [5]. Depression and anxiety can impair students' academic performance and social functioning, cause significant burden at university, and potentially affect their future career opportunities [4,6,7]. Students' help-seeking behavior for their mental health difficulties is limited, with many not contacting relevant professional services [8]. Young people do not seek out help for several reasons, including personal preferences for self-reliance in managing their mental health [9].

Computer-delivered and Internet-enabled interventions have been increasingly trialed in recent years [10]. Programming technology means interventions can be delivered using a range of multimedia formats and interactive features to engage users and facilitate intervention efficacy [11]. Computer- and Internet-delivered interventions hold many advantages; they can be tailored to student needs, accessed anonymously, and provide a more comfortable private environment to access sensitive information [12]. Online interventions can be a form of outreach to individuals who may not access traditional face-to-face services [13]. Evidence-based psychotherapies have been effectively adapted for Internet-based delivery, with much evidence supporting computer-delivered cognitive behavioral therapy (CCBT) in improving depression and/or anxiety outcomes [14-17]. The Internet is an essential tool for higher education and thus highly accessible to students [12,18]. Students also use the Internet for health-related purposes; over a third of students stated that information found via the Internet had a significant effect on their own health self-care [18]. Given that students may not seek out professional help for their mental health, computerized technologies could provide access to self-help. Students may have favorable preferences toward self-help due to their increasing independence and ability to be self-reliant during their transition to young adulthood [19]. Over half of students in an Australian sample who screened for high psychological distress reported strong intentions in using an online program for student well-being [12]. As Internet-based interventions have been cited as an approach that may be particularly engaging and useful for higher education students given their limited help-seeking behavior [12,20-22], there is a need to identify and synthesize the evidence from these types

of interventions for improving common mental health difficulties in higher education populations. Several UK universities appear to offer online counselling to their students, but students still have to engage in help-seeking behavior to access these services and may have stigmatizing attitudes toward professional help [23]. Self-guided computer and Internet-based resources may help to avoid this stigma and be in line with preferences for self-reliance. The recent systematic review by Farrer and colleagues [4] explored technology-based interventions trialed in higher education populations and has provided a comprehensive narrative appraisal of these trials. However, quantitative analysis was not conducted due to the variation of technologies employed in the studies. We hope to expand on this by focusing only on interventions delivered through websites and offline computer programs for improving mental health outcomes, and conducting meta-analysis to explore these outcomes. Analysis of this type of intervention in student populations has not been explored previously. The aim of this review is to explore whether computer-delivered and Web-based (ie, website-based) interventions are effective in improving depression, anxiety, and psychological well-being in higher education students.

Methods**Search Methodology and Identification of Trials**

Nine electronic databases, including PsychINFO, CENTRAL, and PsychMed, were searched in March-April 2012; the search was repeated in June 2013 to ensure the search was as current as possible. Search terms (Multimedia Appendix 1) were developed through literature review and related to Internet- and computer-delivered interventions, mental health, and higher education. Several publisher websites, published reviews, and intervention studies were hand-searched. There was no restriction in year or language of publications. Studies met the following eligibility criteria:

1. The interventions had to aim to improve psychological distress, stress, depressive, or anxiety symptomology, and had administered valid and reliable measure(s) reflecting this symptomology. Interventions that also addressed general aspects of psychological well-being (eg, sleep) and included a primary mental health outcome were also included.
2. The intervention was delivered via a website or offline computer program and accessed via computer, laptop, or other technological device (eg, tablet). These technological mediums were used as a medium for delivering the intervention. Human support was included in the review providing it was delivered by laypersons or non-health care professionals and was a complementary component of intervention.
3. The study was published in a peer-reviewed journal.
4. The intervention was trialed through randomized controlled trial (RCT) design. Trial arms need to consist of an

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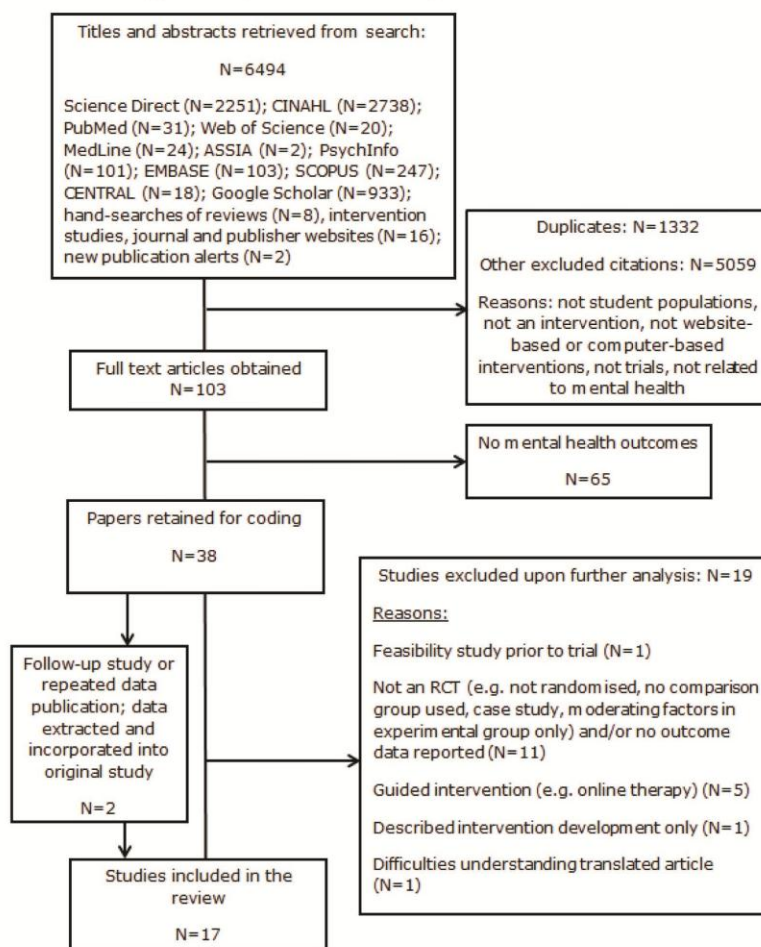
experimental condition and an inactive control (ie, no-treatment or wait list control) condition and/or an active control and/or comparison intervention. Active control was defined as participants who received materials designed to mimic the time and attention received by participants assigned to the intervention. Active controls were not designed to produce the same changes upon outcomes as expected in the intervention.

5. The intervention was trialed on undergraduate and/or postgraduate students in higher education institutions [HEIs]. HEIs were tertiary educational institutions, such as universities and colleges.

Secondary outcomes of interest were help-seeking behavior, mental health service utilization, diagnosis of mental disorder, and participant attrition. Interventions were excluded if there was face-to-face human support adjunct to intervention, they were not Web-based or offline computer programs, they were online support groups, or were mobile or tablet applications. Interventions that utilized computers/Internet to facilitate communication (eg, email, online counselling) between health professionals and users were also excluded as we wanted to explore whether computer-delivered and Web-based interventions were comparable to traditional therapies (eg, face-to-face CBT) and had any effects on mental health outcomes in comparison to receiving no treatment. Mobile applications ("apps") were also excluded as, at the time of

conducting the search, it was felt these were relatively new mediums in terms of therapeutic interventions and appeared more likely to be used as a device to display information in the same way as a DVD/video. Online interventions for eating disorders and alcohol/substance use were not included as these have been previously reviewed in students [24,25]. Publications were excluded if they focused on mediating effects upon outcome measures only within experimental groups, or if both the intervention and active control/comparison intervention received the same intervention materials and there was no inactive control condition.

A total of 6494 titles and abstracts were retrieved from the search and screened by EBD to address their inclusion eligibility. Reference lists of relevant reviews were also searched. The updated search resulted in inclusion of some additional studies that were not published at the time of the first search. The full text of 103 articles was obtained for further analysis and coding. Of these, 38 addressed the targeted mental health criteria and 19 were excluded as they did not meet eligibility criteria or presented translation difficulties [26] (see Multimedia Appendix 2 for further description). A total of 19 articles met inclusion criteria, which included one follow-up to an included study [27] and two publications reporting the same trial [28,29]; data from both were extracted and collapsed into the original studies, resulting in 17 citations. Figure 1 outlines the search process (also see Multimedia Appendix 3).

Figure 1. PRISMA flowchart outlining process for systematic review/meta-analysis.

Data Extraction and Assessment

Data extraction was performed by EBD using a template based on the Cochrane Review template [30] and the CONSORT checklist for reporting eHealth interventions [31]. Authors were contacted if necessary to clarify information. Data regarding post-intervention means and standard deviations from relevant mental health outcome measures and information about participant attrition were extracted from the included studies and entered into Review Manager ("RevMan") software [32].

Interventions were classified by their type of prevention [33]: "universal interventions" target a whole population regardless of individual risk and do not involve screening; "selective interventions" select individuals at some risk of a mental health disorder but without screening of mental health symptomatology; "indicated interventions" target those who screen for some level of mental health symptomatology but do not have a diagnosis;

and "treatment interventions" are delivered to individuals with a diagnosed mental disorder [4]. For this review, "selective" and "indicated" interventions were collapsed into one category as it can be difficult to decipher whether interventions discretely fit into one category.

The level of human support provided to participants was coded using categories used previously [4,34]. Only three categories were used as we did not aim to explore interventions that involved extensive contact time between participants and a human contact. The three categories were: (1) no-contact intervention (no human face-to-face or verbal contact for any aspect of study; email contact only with participants), (2) self-administered intervention (human contact for administration of measures only), and (3) semi-guided intervention (human contact ≤ 90 minutes for prompts or reminders, guidance on intervention use, and/or support in completing intervention).

The Cochrane Collaboration risk of bias tool [35] was used to assess trial quality. The tool provides a checklist to aid understanding of trial quality and does not calculate an overall quality score. The tool assesses study bias across five methodological domains: sequence generation, allocation concealment, blinding, incomplete outcome data, and selective reporting.

Process for Meta-Analysis

Meta-analyses were planned to explore the effects of interventions upon depression, anxiety, stress, and psychological distress related outcomes. These outcomes were analyzed in three subgroups: (1) comparing intervention to inactive control, (2) comparing intervention to active control, and (3) intervention compared to comparison intervention. If trials conducted three or more trial arms, the trial arms were separated corresponding to the three comparison analyses. In studies using two or more active control or comparison intervention conditions, the least active control was entered into analysis. Secondary analyses were conducted to explore year of publication and use of participant incentives upon outcomes, as well as exploring rates of attrition between trial arms. Continuous data on clinical outcomes are often not normally distributed and extracted data were explored for normality via presence of skew. This is done by multiplying the standard deviation by two; if the mean is smaller than this number, it suggests the data is skewed [36]. RevMan was used for calculating effect sizes and conducting meta-analyses. Standard errors were transformed into standard deviations by multiplying the standard error by the square root of the sample size. If insufficient outcome data were reported for extraction, those studies were not included in meta-analysis. If studies reported more than one type of outcome measure for specific outcomes of interest, the measure most aligned to DSM-IV criteria for depressive and anxiety disorders was selected for analysis. The Standardized Mean Difference (SMD) is a version of effect size typically calculated in reviews and is expressed as Hedges' *g*. SMDs were calculated for each included study by subtracting the post-intervention mean of the intervention condition from the post-intervention mean of the comparison condition, and dividing this by the pooled standard deviation from both conditions [37]. Use of SMD allows for comparisons across included studies where they used different psychometric measures to assess the same outcomes [38]. Inferences of Hedges' *g* can be made using Cohen's *d* conventions as small (0.2), medium (0.5), and large (0.8) [39].

We anticipated included studies would be heterogeneous due to the different types of preventative intervention and so would differ on the baseline symptomology of participants. To help account for the expected heterogeneity, Random Effects Models (RAM) with 95% confidence intervals (CI) were applied throughout analysis. RAM assumes that included studies are trialed on different populations and so are calculating different intervention effects [38,40]. The I^2 statistic was calculated to explore heterogeneity and is expressed as a percentage indicating its degree: 25% indicates low heterogeneity, 50% suggests moderate, and 75% is a threshold marker for high heterogeneity [41]. The Q statistic was also calculated and provides the statistical significance of heterogeneity.

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Results

Intervention Characteristics

The search yielded 17 studies. The symptomology measured within trials were depression [28,42-52], anxiety [28,42-48,50], stress [46,53-55], psychological distress [50,54,56], social anxiety [52], and examination anxiety [57]. Some interventions focused on general psychological well-being: improving relationship functioning [43,44], decreasing elevated levels of perfectionism [28,42], increasing students' use of mindfulness [54], improving international students' social support, acculturation, and hardiness [56], and increasing use of lucid dreaming to help alleviate depression [51]. Of the studies, seven trials were of three interventions conducted on separate samples; therefore, there are 14 distinct interventions for review. Multimedia Appendix 4 provides a summary of included interventions.

A total of 11 trials were selective or indicated interventions, where participants were included if they were screened for specific aspects of mental health symptomology or other psychological factors [28,42,45-50,53,55,57]. Inclusion criteria included: elevated perfectionism [28,42], elevated stress [53,55], minimal/mild symptoms of depression and anxiety [45,50], low/moderate psychological distress [47], elevated anxiety sensitivity [48], elevated psychological distress [49], self-reported examination anxiety [57], and mild/moderate levels of depression, anxiety, or stress [46]. Five trials were universal, in which mental symptomology were not explicit inclusion criteria; participants had to be in ≥ 4 month long romantic relationships [43,44], be Indian international students [56], have no lucid dreaming experience [51], or have access to an Internet-connected computer [54]. One intervention was treatment as participants met DSM-IV diagnostic criteria for social anxiety [52]. It is difficult to decipher whether some included trials discretely fitted the selective or indicated type. Some studies recruited participants with minimal symptomology or focused on other risk factors for depression and anxiety, such as elevated perfectionism [28,42].

Of the studies, 11 contained two trial arms [42,44-46,48,49,51,54-57], with five using three arms [28,43,47,52,53], and one study with four arms [50]. Five trials compared intervention to inactive (ie, no treatment or waitlist control) and either an active control [53] or comparison intervention [28,47,50,52], five trialed the intervention to an active control [44,45,55-57], six trialed against inactive control [42,46,48,49,51,54], and one compared intervention to a comparison intervention and active control [43]. Further, 13 studies [28,42-50,52,55,57] trialed interventions based on CBT; this included seven studies in which three interventions were trialed on separate samples [28,42-44,47,49,50]. Other interventions were based on mindfulness [54], stress management theory and cognitive learning theory [53], and lucid dreaming [51].

Location and Delivery of Intervention

The majority of interventions were delivered via a website or university intranet ($n=13$) with four being offline computer programs [43-45,55]. Five trials were delivered at a study site,

eg, researcher-monitored computer lab [43-45,47,50,55], while participants in six Internet-based interventions accessed the intervention in their own location [48,49,52,53,56,57]. A total of 14 trials had interventions with an modular/sectional format [28,42-48,50,52,54-57] ranging from three [56] to 13 modules [28,42]. The other trials coupled module-based ("MoodGym") and psycho-educational ("BluePages") websites [49], provided biweekly instruction via a website [51], and included a psycho-educational stress management website [53]. The intervention delivery period ranged from 2 [53,54] to 12 weeks [42], with median length of 6 weeks. All studies reported short-term outcomes (≤ 12 weeks) with measures usually administered at the end of the trial. Five reported additional follow-up at 6 months [46,48,53], 10 months [44], and 1 year post-baseline [52]. Four Web-based interventions stated how much time was required to spend accessing the intervention: at least four 20-minute periods over 2 weeks [53]; 1 hour per week over 3 weeks [47]; 30 minutes per week over 6 weeks [57]; and 5-7 days for each module [48]. The four computer-delivered interventions took between 30 to 120 minutes [43-45,55] to complete and were supplemented by weekly standardized emails.

Use of Human Support in Interventions

Seven trials were classified as self-administered [28,42,48,51-53,57], with nine being semi-guided [43-47,50,54-56]. Participants in one trial received no reminders but it was unsure if there was face-to-face/verbal contact between researchers and participants [49]. For semi-guided interventions, six trials involved sending standardized emails periodically to encourage participants to complete the intervention [54,56], or to remind participants about the principles learned in the computer-based intervention [43-45,55]. Chiauzzi [53] sent reminder emails only if participants were not accessing the intervention for the required duration. Two trials featured weekly telephone or email-based support from a "program coach" [46] or from the researchers [55] to help participants complete the intervention or to prompt skills practice. Six trials [43-45,47,50,55] were carried out at a study site where a researcher was present to provide support and aid participants' familiarity with the intervention. One intervention involved peer interaction via online forum [56]. Three offline computer-delivered interventions involved a single session of participant-computer interaction, supplemented with hard copies of the presented material [43,44] or worksheets to complete after experiencing a stressful encounter [45]. The additional computer-delivered intervention was accessed weekly over 6 weeks and was supplemented with hard copies and a practice version of the intervention on a USB flash drive for off-site personal access [55].

Participant Characteristics

A total of 1795 participants consented and were randomized to a trial arm. Sample sizes ranged from 38 [50] to 240 [53]. Four trials had samples of ≥ 150 participants [45,49,51,53]. Overall, 1480 were explicitly included in analyses. Seven studies explicitly stated analysis was conducted on participants who completed pre-post intervention measures [28,42,45,48,55-57], while eight studies conducted intention-to-treat [ITT] analyses

[44,46,47,49,50,52-54]. ITT was conducted through using maximum likelihood estimation [44,46], mixed-models repeated measures [49], mixed-models analysis [53], and by carrying last observation forward [52,54]. One reported separate ITT, completers, and compliers analyses [49]. Uncertainty about types of analysis was present in two publications [43,51]; 12 publications provided information regarding participant dropouts/withdrawals: dropout rates ranged from 7.2% [28] to 44.2% [54]. Five provided some reason for withdrawal; this included not receiving response to researcher's contact [44], personal time constraints [42,48,52], personal reasons [42], concerns about intervention efficacy [52], participants felt better after receiving some intervention modules [52], and participant requested face-to-face therapy instead [49].

The 10 studies describing their sample's age range included participants ranging from 17 to 51 years. In 15 trials, participants' mean age ranged from 18.37 to 28.2 years; their mean age from these was 22.6 years. All studies recruited males and females, with females being the majority in 15 studies. Gender balance varied from 50% [55] to 88.46% [54] of the sample being female. A total of 10 trials were conducted on undergraduate populations [28,42-45,47,48,50,51,53], five on both undergraduates and postgraduates [46,49,52,54,57], and two on postgraduates only [55,56]. Psychology students were overrepresented in the undergraduate studies with seven recruiting psychology undergraduates only [28,42-45,48,50] and another recruiting psychology and health sciences students [47]. Likewise, seven trials reported use of course or financial credit for participation [42-45,47,50,51,55]. The majority of trials ($n=7$) were conducted in HEIs in the United States [43-45,51,53,56], with three trials in Canada [28,42,46] and Australia [47,48,50], two in the United Kingdom [54,57], one in Spain [52] and Norway [49]. Further, 13 trials were conducted within one HEI [28,42-45,47,48,50,51,54-57]; the others recruited students at two [49,52], three [46], and six [53] HEIs.

Multimedia Use and Interactivity of Interventions

Limited information was provided regarding multimedia and interactivity. Text was presented in all interventions, with the use of images/graphics also reported [43,44,47-49,53,56]. Animation, music, and audio voiceovers were used in the examination anxiety intervention [57], and the social anxiety intervention utilized streaming of online videos to expose participants to an anxiety-inducing situation [52]. MoodGym [47,49,50] included interactive activities and an online workbook. Recently published studies appeared to provide more information on the presentation and interactivity of intervention content. Day [46] reported each module was presented using a range of videos, audio, pictures, and interactive activities. Mindfulness was taught through text and videos, and participants were able to choose to listen to either a male- or female-delivered 10-minute audio of meditation instruction [54]. SMART-OP [55] incorporated animation, videos, and text to create a tailored user experience, as well as using game-like interactive tasks.

Outcome Measures Used

A small number of established valid and reliable measures were used to primarily measure depression, anxiety, psychological

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distress, and stress outcomes (see Table 1). Stress is an important psychological well-being outcome given that students are faced with several stressors during their studies and elevated stress can increase the risk of developing mental health difficulties

[58]. All trials administered self-report measures to participants, either through hard copy or through online administration. One study administered the Trier Social Stress Test and measured associated physiological stress responses [55].

Table 1. Outcome measures used for assessment of depression, anxiety, psychological distress, and stress in the included studies.

Author	Anxiety				Depression				Psychological distress		Stress	
	ASI ^a	BAI ^b	DASS-21 ^c	SAD ^d	TAI ^e	BDI ^f	CES-D ^g	DASS-21	K10 ^h	PHQ-4 ⁱ	PSS ^j	DASS-21
Arpin-Cribbie 2012	✓	✓					✓				✓	
Botella 2010				✓		✓						
Braithwaite 2007		✓				✓						
Braithwaite 2009		✓				✓						
Cavanagh 2013										✓	✓	
Chiauzzi 2008											✓	
Cukrowicz 2007		✓					✓					
Day 2013	✓		✓					✓				✓
Ellis 2011			✓					✓	✓			✓ ^k
Kanekar 2010									✓ ^l			
Kenardy 2003	✓						✓					
Lintvedt 2011							✓					
Orbach 2007					✓							
Radhu 2012		✓					✓				✓	
Rose 2013											✓	
Sethi 2010			✓					✓	✓			✓ ^k
Taitz 2011						✓						

^aASI: Anxiety Sensitivity Inventory

^bBAI: Beck Anxiety Inventory

^cDASS-21: Depression Anxiety and Stress Scale – 21 item version

^dSAD: Social Avoidance and Distress scale

^eTAI: Test Anxiety Inventory

^fBDI: Beck Depression Inventory

^gCES-D: Center for Epidemiologic Studies Depression Scale

^hK10: Kessler Distress Scale – 10 item version

ⁱPHQ-4: Patient Health Questionnaire – 4 item version

^jPSS: Perceived Stress Scale

^kData from stress subscale of DASS-21 was not reported in the published article.

^lShorter version of scale used to analyze data collected on K10.

Questionnaire Response Burden

Response burden reflects the amount of strain put on an individual to complete measures; factors influencing burden include length and intensity of measures and concentration required to complete them [59]. Response burden is a factor to consider in trials as participants typically complete a battery of measures at baseline and post-intervention, and potentially at more time-points during trials. Too many questions may increase burden and result in greater attrition or lower response rates [59]. We calculated the number of questions participants

completed by reviewing the measures within included publications and totaling the approximated number of items within administered measures. It was estimated the measurement battery ranged from 25 [46] to 225 questions [42]. The estimated median number of questions presented to participants was 75 items.

Participant Satisfaction/Evaluation With Intervention

Eight studies administered a form of participant evaluation [46-49,53-55,57]. Included interventions were reported to be highly useable [55], satisfactory [53], credible [48], and to be

moderately-to-highly useful and helpful [46,47,49,54,57]. Cavanagh [54] directly asked participants if they felt the intervention had been beneficial; the majority felt the mindfulness intervention had at least some personal benefit. Day's intervention [46] underwent usability, efficiency, and acceptability testing by university students prior to being trialed [60].

Risk of Bias in Included Studies

We believed the risk of bias in included studies to be moderate—this was mostly due to publications being unclear or providing insufficient details (see Figure 2). All participants were randomized but only six studies [28,43,46,49,54,57] described their randomization method: a random number table [28], a computer-generated randomization sequence [43,46,49,54], and through tossing a coin [57]. Two studies [43,56] did not explicitly state how many participants were in each condition. It is viable to blind those collecting and/or assessing outcome data, as blinding participants can be difficult

given the type of controls [14,31]. One study stated single-blindedness of participants and provided post-intervention evaluation of researchers' non-blindedness [53]; another reported single-blindedness of researcher collecting data [28]. Seven studies [28,42,45,48,55-57] explicitly did completers' analyses—overall, 208 participants were not included in analysis. Outcome data from three studies could not be extracted due to not reporting participant numbers in each condition [43,56], not reporting SD/standard error data [43,53], and assessing outcome data using a shortened version of the measure [56]. Gender balance is an issue as the majority of trials had more female than male participants. Baseline symptomology is also a potential source of bias for the review, as it may have caused some difficulties comparing intervention effectiveness in improving mental health outcomes. Trials varied in the level of mental health-related symptomology they targeted at baseline; some only recruited participants with minimal symptoms, while others wanted those experiencing elevated symptoms.

Figure 2. Breakdown of each type of risk of bias identified in the included studies.

	a.	b.	c.	d.	e.	f.	g.
[I/S] Arpin-Cribbie 2012	+	?	?	+	-	-	?
[I/S] Chiauuzzi 2008	?	?	+	+	+	-	?
[I/S] Cukrowicz 2007	?	?	?	?	-	?	?
[I/S] Day 2013	+	+	+	?	+	+	?
[I/S] Ellis 2011	?	?	?	?	+	+	?
[I/S] Kenardy 2003	?	?	?	?	-	+	?
[I/S] Lintvedt 2011	+	?	?	?	+	+	?
[I/S] Orbach 2007	+	?	?	?	-	?	?
[I/S] Radhu 2012	?	?	?	?	-	+	?
[I/S] Rose 2013	?	?	?	?	-	+	?
[I/S] Sethi 2010	?	?	?	?	+	+	?
[T] Botella 2010	?	?	?	?	+	+	?
[U] Braithwaite 2007	?	?	?	?	-	-	?
[U] Braithwaite 2009	+	?	?	?	+	+	?
[U] Cavanagh 2013	+	?	?	?	+	+	?
[U] Kanekar 2010	?	?	?	?	-	-	?
[U] Taitz 2011	?	?	?	?	+	+	?

a. Random sequence generation (selection bias)

b. Allocation concealment (selection bias)

c. Blinding of participants and personnel (performance bias)

d. Blinding of outcome assessment (detection bias)

e. Incomplete outcome data (attrition bias)

f. Selective reporting (reporting bias)

g. Other bias

+ Low risk of bias
? Unclear risk of bias
- High risk of bias

Distribution of the Reported Data

Six studies explicitly stated their data had been checked for violations of assumptions of normality [28,45,49,53,55,57]. Two studies transformed skewed data for analysis to approximate a normal distribution [53,55], while Orbach [57] used non-parametric tests for skewed data. None of the included studies appeared to provide alternative measures of central

tendency. Overall, there were 10 studies that reported skewed post-intervention on at least one primary outcome measure of interest [28,42,44-47,49,51,52,54].

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Meta-Analysis for Anxiety, Depression, and Psychological Distress Outcomes

Outcome data relating to the mental health symptomology measures was not extracted from three studies due to insufficient data reporting [43,53,56]. Orbach's trial [57] was excluded from meta-analysis for anxiety outcomes, as test anxiety is considered an "extreme" reaction to examinations and is distinct from commonly diagnosable anxiety disorders [57]. Data regarding participant attrition could be extracted from two of these studies [53,57]. All mental health outcomes were continuous and scale-based, and were extracted as endpoint average scores with lower scores indicating fewer symptoms. Within the presented analyses, negative SMD values support the intervention condition.

Three analyses exploring intervention compared to inactive control, intervention compared to active control, and intervention compared to comparison intervention were conducted and are reported separately. For each type of comparison, outcomes relating to depression, anxiety, psychological distress, and stress are separately reported. For each outcome within each comparison, analyses are presented twofold: non-skewed data were analyzed first, with a secondary sensitivity analysis conducted to analyze skewed and non-skewed data on each outcome. If skewed data were present in one trial arm but not in the other, it was included in sensitivity analysis. Findings within forest plots were subgrouped by the separate measures used to measure each outcome in addition to calculation of an overall pooled effect. On all presented forest plots (see Figures), the bracketed letter before author name indicates their type: [U] universal intervention, [I/S] indicated or selective intervention, and [T] treatment intervention.

Web-Based or Computer-Delivered Intervention Compared to Inactive Control

Seven trials used this trial arm comparison to investigate effects of intervention upon anxiety outcomes. All trials were based on CBT and include four separate trials of two interventions [28,42,47,50]. Two trials reported non-skewed data—for these there was no difference between intervention and control for anxiety ($n=93$, 2 RCTs, pooled SMD -0.67 , CI -1.59 to -0.25 , $Z=1.43$, $P=.15$; $I^2=66\%$, $P=.09$). Sensitivity analysis incorporated an additional five studies reporting skewed data.

This analysis significantly favored the intervention ($n=374$, 7 RCTs, pooled SMD -0.56 , CI -0.77 to -0.35 , $Z=5.19$, $P<.001$; $I^2=0\%$, $P=.63$; see Figure 3).

Nine trials that compared intervention to inactive control reported depression outcomes. Eight trials had CBT-based interventions and included five separate trials of two interventions [28,42,47,49,50]. Three trials reported non-skewed outcome data and significantly favored intervention ($n=144$, 3 RCTs, pooled SMD -0.67 , CI -1.15 to -0.20 , $Z=2.77$, $P=.006$; $I^2=43\%$, $P=.17$). A separate sensitivity analysis included an additional six studies reporting skewed data, with this analysis significantly favoring intervention ($n=712$, 9 RCTs, pooled SMD -0.43 , CI -0.63 to -0.22 , $Z=4.06$, $P<.001$; $I^2=39\%$, $P=.11$; see Figure 4).

Two trials measured psychological distress, of which one reported skewed data [54]. Cochrane Collaboration guidelines suggest forest plots should not be produced for outcomes with single studies [61]; therefore, findings from the single non-skewed trial are presented in Multimedia Appendix 5. A sensitivity analysis was performed to include the additional study, which found no difference between intervention and control ($n=123$, 2 RCTs, SMD -1.39 , 95% CI -3.79 to 1.02 , $Z=1.13$, $P=.26$). Significantly high heterogeneity was present ($I^2=92\%$, $P<.001$).

Three RCTs included an outcome measure of stress. For the two studies reporting non-skewed data, there was significant favorability for intervention ($n=151$, 2 RCTs, pooled SMD -0.44 , CI -0.77 to -0.12 , $Z=2.68$, $P=.007$; $I^2=0\%$, $P=.49$). A separate sensitivity analysis included the additional skewed data, which significantly favored intervention ($n=217$, 3 RCTs, pooled SMD -0.73 , CI -1.27 to -0.19 , $Z=2.64$, $P=.008$). A significant high level of heterogeneity was present ($I^2=72\%$, $P=.03$).

Looking at attrition rates, participants were significantly more likely to leave the study early if they were randomly assigned to receive intervention ($n=999$, 11 RCTs, OR 2.73, CI 1.56–4.76, $Z=3.54$, $P<.001$; $I^2=30\%$, $P=.20$; Figure 5). A total of 118 (22.7%) left the intervention condition early, compared to 52 (10.8%) in the inactive control condition.

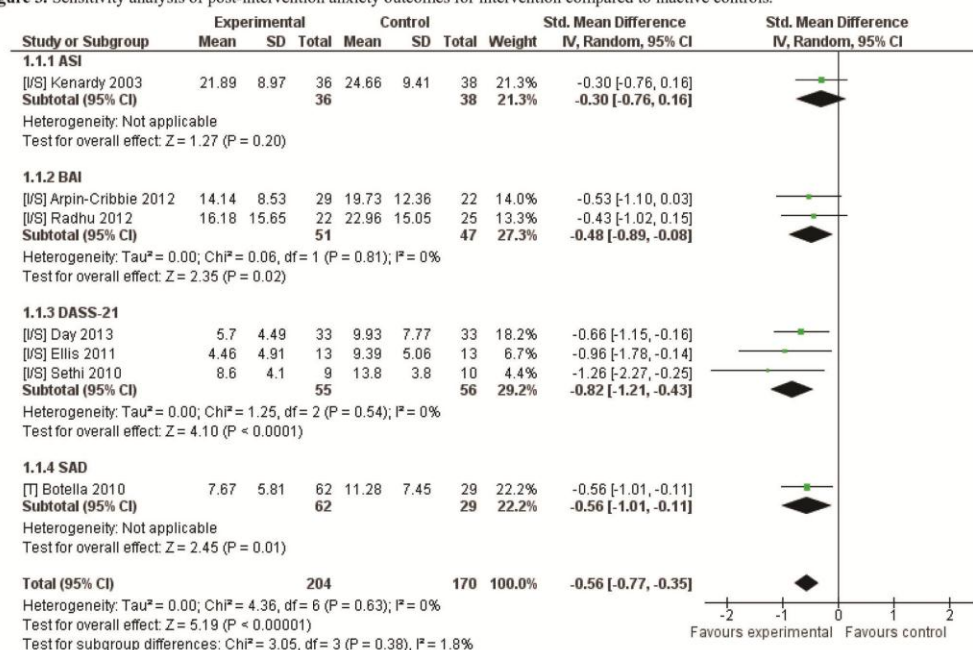
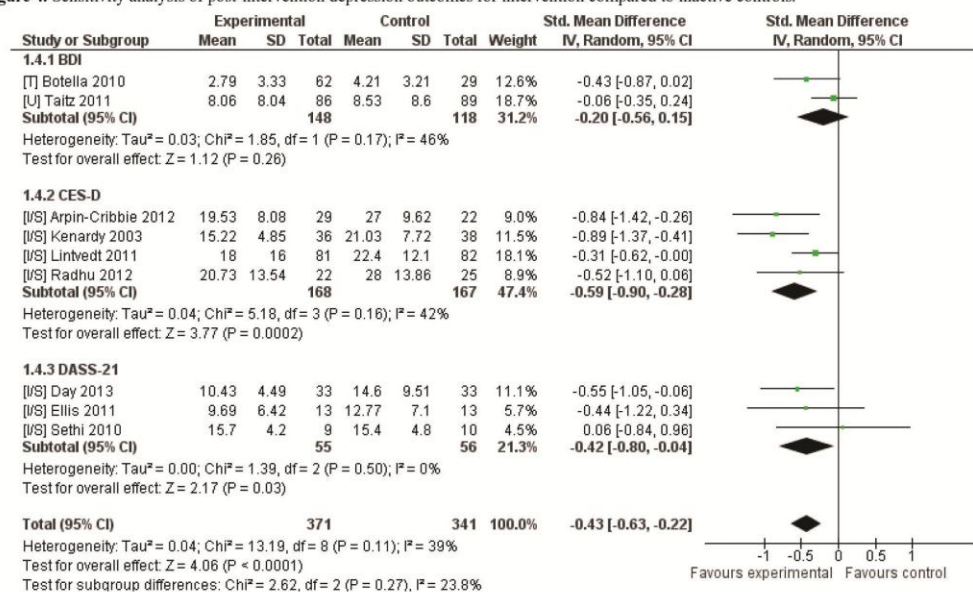
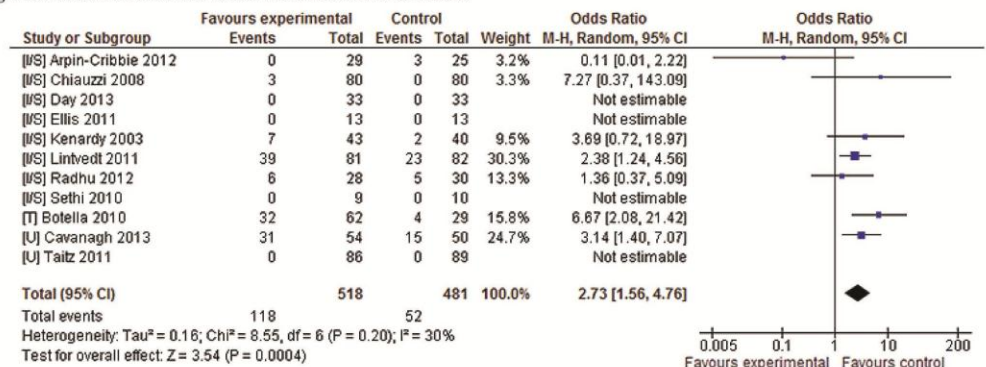
Figure 3. Sensitivity analysis of post-intervention anxiety outcomes for intervention compared to inactive controls.**Figure 4.** Sensitivity analysis of post-intervention depression outcomes for intervention compared to inactive controls.

Figure 5. Attrition rates for intervention vs inactive control conditions.

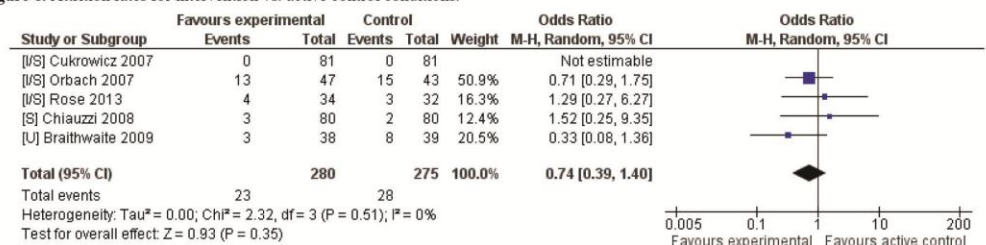
Web-Based or Computer-Delivered Intervention Compared to Active Control

There were seven trials that explicitly included an active control, but only three reported their outcome data relating to mental health outcomes of interest, or could not be included for reasons previously described. Data relating to attrition could be extracted from five of these trials. Two used the same active control in which participants viewed computer-based materials that provided descriptive information about depression and anxiety [44,45].

Two trials compared intervention to active control in investigating anxiety outcomes, both of which reported skewed data. Sensitivity analysis did not favor either intervention or active control ($n=229$, 2 RCTs, pooled SMD -0.18 , CI -0.98

to 0.62 , $Z=0.45$, $P=.66$). A high level of heterogeneity was reported ($I^2=88\%$, $P<.001$). The same two trials also reported depression outcomes [44,45], which again were skewed. Sensitivity analysis did not support either condition ($n=229$, 2 RCTs, pooled SMD -0.28 , CI -0.75 to 0.20 , $Z=1.14$, $P=.25$; $I^2=67\%$, $P=.08$).

Only one trial assessed psychological distress within the intervention vs active control comparison [55]. It was not subject to analysis due to being the sole study (see Multimedia Appendix 5). There were no significant differences reported between attrition in the two arms ($n=555$, 5 RCTs, OR 0.74 , CI 0.39 - 1.40 , $Z=0.93$, $P=.35$; $I^2=0\%$, $P=.51$; see Figure 6). A total of 23 (8.2%) participants left the intervention condition early, compared to 28 (10.1%) in the active controls.

Figure 6. Attrition rates for intervention vs. active control conditions.

Web-Based or Computer-Delivered Intervention Compared to Comparison Intervention

Five trials compared the intervention to a comparison intervention. Comparison interventions were a Web-based stress management intervention [28], a face-to-face version of the intervention [52], another computer-based CBT program [43], and an online support group [47]. Sethi's trial [50] compared intervention to two comparison interventions consisting of face-to-face CBT and this combined with MoodGym. The face-to-face CBT was selected for this analysis to avoid double-counting of the intervention condition's data. Outcome data from one trial could not be extracted for analysis [43], resulting in four trials, which all reported depression and anxiety

outcomes, and included two trials of MoodGym [47,50]. Sensitivity analyses were conducted for both outcomes as only one trial in each outcome reported non-skewed data (see Multimedia Appendix 5). For anxiety, neither intervention nor comparison were favored over each other ($n=198$, 4 RCTs, pooled SMD -0.10 , CI -0.39 to 0.18 , $Z=0.71$, $P=.48$; $I^2=0\%$, $P=.90$; see Figure 7). Likewise for depression outcomes neither condition was favored ($n=198$, 4 RCTs, pooled SMD 0.33 , CI -0.43 to 1.09 , $Z=0.85$, $P=.40$) (see Figure 8). There was a significant high level of heterogeneity reported for depression ($I^2=82\%$, $P=.001$). Only one study reported outcomes relating to psychological distress (reported in Multimedia Appendix 5). There were no differences between conditions in leaving the

study early ($n=194$, 4 RCTs, OR 1.18, CI 0.02-60.23, $Z=0.08$, $P=.93$; $I^2=0\%$, $P=.51$). All attrition from the main intervention

condition came from one study [52], wherein 32 participants left the study early. Seven (8.6%) in the comparison intervention condition left the study early.

Figure 7. Sensitivity analysis of post-intervention anxiety outcomes for intervention compared to comparison intervention.

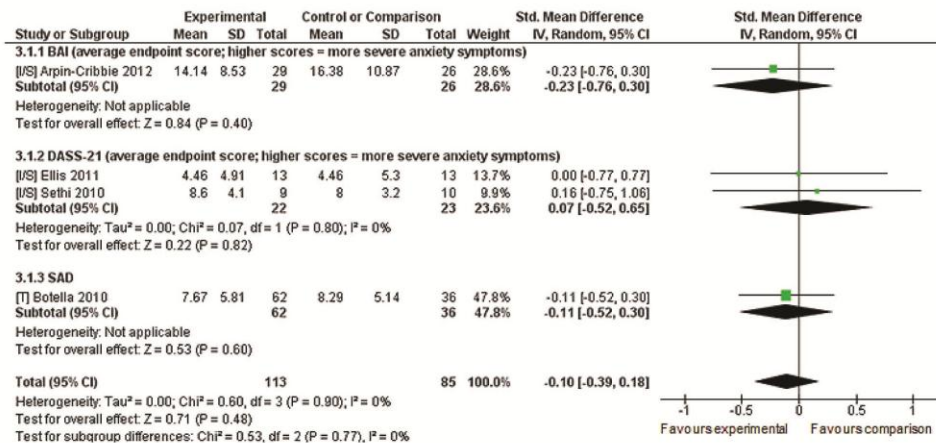
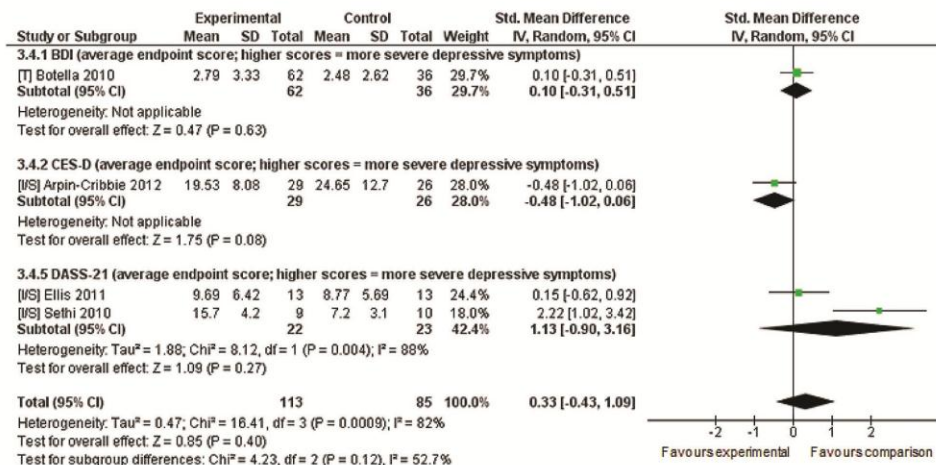


Figure 8. Sensitivity analysis of post-intervention depression outcomes for intervention compared to comparison intervention.



Additional Analyses

Given some of the methodological issues identified in the review, some additional sensitivity meta-analyses were performed. More recent publications appeared to report greater levels of methodological detail, possibly due to the research field being more established. The CONSORT-EHEALTH statement is a checklist providing a minimum list of recommendations for reporting RCTs of Internet and mobile-based interventions; it expands upon the previously

published CONSORT statement [31,62]. The publication of the CONSORT-EHEALTH checklist was used as a benchmark for comparing 'older' (published ≤ 2011) to 'newer' (≥ 2012) publications. Included studies within the meta-analysis were separated based on their year of publication. These analyses could only be done for anxiety and depression outcomes in the intervention vs inactive control and vs comparison intervention comparisons due to low numbers of included trials and no differences in the publication dates in other comparisons and outcomes.

For depression outcomes in intervention compared to inactive control, a larger effect size was reported for more recent publications ($n=164$, 3 RCTs, pooled SMD -0.63 , CI -0.94 to -0.31 , $Z=3.91$, $P<.001$; $I^2=0\%$, $P=.70$), than for older publications ($n=548$, 6 RCTs, pooled SMD -0.35 , CI -0.60 to -0.09 , $Z=2.64$, $P=.008$; $I^2=47\%$, $P=.09$). For anxiety outcomes in the same comparison, there was little variation in the effect sizes and statistical significance in older ($n=210$, 4 RCTs, pooled SMD -0.60 , CI -0.95 to -0.25 , $Z=3.37$, $P<.001$; $I^2=25\%$, $P=.26$) and newer publications ($n=164$, 3 RCTs, pooled SMD -0.55 , CI -0.87 to -0.24 , $Z=3.46$, $P<.001$; $I^2=0\%$, $P=.84$). For depression and anxiety outcomes for intervention in contrast to a comparison intervention, there was only one post-2012 publication; analysis of all studies in this outcome is reported in the previous section. Looking at ≤ 2011 studies only, there was no difference reported between intervention and comparison for depression ($n=143$, 3 RCTs, pooled SMD 0.68 , CI -0.33 to 1.69 , $Z=1.31$, $P=.19$; $I^2=82\%$, $P=.004$) or anxiety ($n=143$, 3 RCTs, pooled SMD -0.05 , CI -0.39 to 0.28 , $Z=0.30$, $P=.76$ ($I^2=0\%$, $P=.086$)).

Additional sensitivity analyses were also conducted to focus on trials that rewarded course credits for participation. This was not performed for the intervention vs active control comparison as all studies within this rewarded credit. Looking at studies that gave credit in the intervention vs inactive control comparison, the intervention was supported in improving anxiety outcomes ($n=92$, 3 RCTs, pooled SMD -0.75 , CI -1.23 to -0.28 , $Z=3.10$, $P=.002$; $I^2=15\%$, $P=.31$) but not for depression ($n=267$, 4 RCTs, pooled SMD -0.16 , CI -0.41 to 0.08 , $Z=1.33$, $P=.18$; $I^2=0\%$, $P=.44$). For studies that did not reward credit, intervention still supported anxiety ($n=282$, 4 RCTs, pooled SMD -0.51 , CI -0.75 to -0.26 , $Z=4.07$, $P<.001$; $I^2=0\%$, $P=.75$) and also supported depression ($n=282$, 5 RCTs, pooled SMD -0.55 , CI -0.78 to -0.32 , $Z=4.66$, $P<.001$; $I^2=26\%$, $P=.25$).

For participants who received credit in the intervention vs comparison intervention contrasts, neither condition was supported for anxiety ($n=45$, 2 RCTs, pooled SMD 0.07 , CI -0.52 to 0.65 , $Z=0.22$, $P=.82$; $I^2=0\%$, $P=.80$) or depression ($n=45$, 2 RCTs, pooled SMD 1.13 , CI -0.90 to 3.16 , $Z=1.09$, $P=.27$; $I^2=88\%$, $P=.004$). The same findings were repeated for participants that did not receive credit, upon anxiety ($n=153$, 2 RCTs, pooled SMD -0.15 , CI -0.48 to 0.17 , $Z=0.93$, $P=.35$; $I^2=0\%$, $P=.73$) and depression outcomes ($n=153$, 2 RCTs, pooled SMD -0.16 , CI -0.73 to 0.40 , $Z=0.57$, $P=.57$; $I^2=65\%$, $P=.09$).

Discussion

Principal Findings

A total of 17 studies were retrieved for this review, of which 14 were entered into meta-analysis. The majority of studies administered measures of both depression and anxiety (9/17, 53%), with two also measuring stress or psychological distress. Two studies reported targeting depression alone, with the six remaining studies reporting a mixture of outcomes. The majority were Web-based trials ($n=13$) with four delivered via an offline

computer-delivered program. The review findings suggest Web-based and computer-delivered interventions can produce beneficial mental health outcomes in university students, supporting previous reviews of Internet and computerized interventions for depression and anxiety [14,16,40]. Our search found several recent publications not reviewed previously [4], which demonstrates the fast pace of publications in this field.

Findings demonstrated a difference in outcome data depending on the type of analyses conducted. Non-skewed data alone did not favor intervention in improving anxiety, but sensitivity analysis favored intervention when compared to inactive control. However, improvements in anxiety outcomes were not supported when intervention was compared to active control or comparison intervention. Similar findings were reported for depression outcomes. Non-skewed data for intervention compared to inactive control revealed a larger effect size (SMD -0.67) than the sensitivity analysis (SMD -0.43), suggesting skewed data can potentially affect the overall power of interventions. For psychological distress, the data did not support the intervention. The small number of studies, the different measures used, and the type of intervention complicates interpretation of findings. For stress, compared to inactive control, both meta-analyses supported intervention, with a larger effect found for sensitivity (SMD -0.73) than non-skewed analysis (-0.44). Similarly, the heterogeneity went from 0% for non-skewed analysis to 70% for sensitivity analysis, so this difference could be due to the skewed data.

When compared to inactive control, interventions appeared to be supported in improving outcomes apart from psychological distress. When compared to active control and comparison interventions, computer-delivered and Web-based interventions were not significantly supported in improving depression or anxiety. This was anticipated given that participants were still actively doing something, compared to an inactive control [40]. Neither intervention nor comparison intervention were significantly favored in meta-analysis, which may suggest some equivalency in their effect upon improving anxiety and depression outcomes. A reason this finding may have occurred could be due to the type of comparison intervention used. Two comparison interventions were face-to-face CBT, which is representative of the kind of help university students would typically receive for common mental health problems. Further research comparing these technology-based interventions to treatment-as-usual conditions would be beneficial in exploring the viability of self-guided Internet-based interventions for university students, and whether they have equivalency in comparison to the therapies young people would usually receive. Larger effect sizes within intervention vs inactive control comparisons than intervention vs active control have been reported previously in CCBT reviews [16,40]. Both active controls were identical in their content; the lack of significant effect found in the meta-analysis suggests neither intervention nor active control were more advantageous in improving outcomes. This finding may question what is the minimum level of active control needed to produce positive change.

Moderate to high heterogeneity were reported for two of the analyses comparing intervention against active control and comparison intervention. This could be due to the type of

comparison intervention or that differences in outcome data at baseline affected post-intervention symptom improvement. Grist and Cavanagh [16] identified type of control condition as being a significant moderating factor explaining heterogeneity within meta-analyses. In trials of CCBT, active controls often share some commonalities with the experimental intervention; effect sizes reported previously suggest CCBT can offer some additional small benefits in improving psychological outcomes [16]. A total of 13 studies involved CBT-based interventions, which supports findings from previous CCBT reviews [14–17]. While this continues to provide strong support for CCBT, research should explore what other evidence-based psychological and psychotherapeutic theories can be adapted to this medium [40]. It is difficult to determine which elements of the intervention produced the most beneficial effects, and there are many factors to consider, such as level of support, intervention length, the number and content of modules, and actual participant engagement.

Separating older and newer studies did appear to have an effect upon the effect sizes for depression outcomes in intervention vs inactive control comparisons, with a larger effect size found for more recent publications. Within the same comparison, there was little difference in effect sizes for anxiety, and separating the studies did not appear to add any additional insight into intervention vs comparison intervention analyses. These contrasting findings may suggest research into Internet interventions has somewhat strengthened over the years and become more methodologically sound. However, these links are tenuous given the small numbers of included trials within the separate analyses.

Future trials within university student populations should consider the effect of participant incentives and rewards upon outcomes; given that students are typically financially strained, outcomes in trials may differ from their real-world non-trial use of interventions. Separate sensitivity analyses were conducted to explore whether receiving participatory reward affected outcomes. Within the intervention vs inactive control comparison for anxiety, a larger effect size was reported for studies that did reward credit (SMD -0.75) than for those that did not (SMD -0.51). However, for depression the analysis did not support intervention in studies that rewarded credit, whereas those that did not use incentives reported a significant favoring for intervention (SMD -0.55). Sensitivity analyses for rewards within the intervention vs comparison intervention contrast reported similar findings in line with the main meta-analysis. The contrasting findings for this comparison do not allow us to precisely conclude that rewarding participants does increase an intervention's efficacy, but incentives and rewards are a factor to consider when disseminating trial findings. A meta-analysis of Web-based surveys found that incentives for participation increased individuals' motivation to start and complete the survey [63]. Similarly, college students who participated in an incentive-based online intervention for weight loss reported that financial rewards acted as a strong external motivator to lose weight and achieve weekly goals, although they also commented that the financial incentive did not influence their intrinsic motivation to participate [64]. The majority of studies that utilized participatory reward did so through providing course

credit. This may differ somewhat from financial incentives but nonetheless requires consideration as students may place similar personal value upon monetary and course credit rewards. Some publications insufficiently reported their outcome data. Authors should aim to provide a CONSORT-EHEALTH statement to help report their interventions [31] so the design and content of interventions can be viewed clearly. Authors in more recent publications appeared to report more aspects of this checklist in their respective publications.

Participant dropouts were reported in 12 studies; attrition is common in these types of intervention trials [65,66]. Two studies [50,54] had similar rationales for delivering their interventions over a short timeframe—shorter interventions are associated with increased engagement and retention of participants. Baseline symptoms have been associated with attrition rates—lower depressive symptoms were positively associated with increased adherence to interventions in one review [65]. As some of the included interventions recruited participants with minimal/mild symptomology, this is an issue to consider. Only two trials assessed whether participants' levels of adherence affected their level of post-intervention improvement upon mental health, in which no associations were found [48,53]. With Internet-delivered interventions, it can be difficult to assess participants' levels of intervention engagement and there may be variation in how participant engagement is defined [31].

Participant attrition was more likely to occur in intervention groups when compared to inactive control, with no association found for comparisons to active control or comparison intervention. This was found in a review of CCBT [16]. Grist suggests the finding of no attrition differences in intervention and active control groups indicates that attrition is common in any active condition, whether it be the experimental intervention or an active control, and is not just a consequence of receiving CCBT. It may suggest some level of support is required to help participants adhere to the intervention. Only a few trials provided detail about participants' reasons for dropping out. Attrition has commonly been used as a proxy measure of participant evaluation and attitudes towards CCBT [20,48]. Interventions that do not sufficiently engage or appeal to the user may be more susceptible to dropout [48]. Interventions could potentially show positive effects due to the unengaged participants withdrawing from the study [57]; attrition may partially account for this review's positive findings. Seeking participants' reasons for disengaging from intervention is important in helping identify factors affecting adherence.

Aside from Botella's trial, which aimed to treat diagnosable social phobia [52], none of the studies explored post-intervention diagnosis of mental disorders. This is important as these interventions are used as mental health prevention and longitudinal follow-up would allow us to explore the interventions' preventative effects. Help-seeking intentions and/or behaviors were not assessed through standardized measures in any study; these interventions can subsequently affect participants' help-seeking [40]. Over a third of participants in one trial stated that as a result of the intervention they had changed their behavior, which included seeking out more information, trying self-help techniques described in the

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intervention, and supporting others [49]. It is understandable that follow-up may be difficult in university students given the transient nature of university life—students may change address or leave higher education between post-intervention and follow-up periods. The timing of conducting trials is important given the fluctuating demands occurring during the academic year. Only three studies reported when post-intervention measures were administered; two of these were during examination periods [44,49] and so improvements may also be demonstrated during periods of high stress.

Just over half the interventions were semi-guided. Most of these incorporated a strategy to maintain engagement and thereby encourage adherence, such as using standardized reminders, receiving the intervention at a study site, or support from a non-therapeutic individual. We did not analyze whether there were any differences in effects between semi-guided and self-administered interventions, and cannot make assumptions about the impact of human interaction upon intervention effectiveness. A previous review found larger effect sizes for self/un-guided interventions than ones involving guidance [16].

Two interventions [46,55] had a large amount of human contact with participants. In both trials, participants received weekly contact from researchers or from program coaches to support them in completing the intervention. This kind of support provides reduced training costs compared to interventions that involve support from health care professionals, and as the program coaches were students themselves, participants may have found them relatable. Administration of trials in researcher-monitored settings could have affected participants' engagement with the intervention [14]. Johannson and Andersson [34] found increased human therapeutic support given to users was significantly associated with larger intervention effects. There was limited evaluation regarding participants' perceptions about the beneficial or therapeutic effects of human support, but nonetheless the amount of contact participants had with another person could affect intervention effectiveness.

Mental health outcomes were assessed using a small number of well-established continuous measures aligned with diagnostic criteria. This made comparisons in the meta-analysis less complicated; however, having several measures can increase statistical heterogeneity [67]. We attempted to counteract this by investigating intervention effects by subgrouping each type of measure within each outcome, and looking separately at the overall pooled effect. By doing this, we could explore measurement comparisons for each outcome, which did show some variation in the different measures used for the same outcomes.

The overwhelming presence of skewed data in the included studies affected the quality of the available evidence. Skewed data has been reported previously in a review of computer-delivered interventions for reducing alcohol consumption [68]. Almost all included studies reported the mean and standard deviation from outcome measures, and none reported alternative measures of central tendency. Only a minority had transformed skewed data or used non-parametric tests. The meta-analyses reported a vast quantity of

heterogeneity, which hinders their generalizability, and the differences in the scoring range of measures may be a reason why it occurred. For example, the two psychological distress measures varied on their scoring range: the PHQ-4 (Patient Health Questionnaire) was a brief measure where scores range from 0 to 12, while scores on the K10 (Kessler Distress Scale) range from 0 to 40. Large heterogeneity has been reported previously in reviews of Internet-delivered and computer-based interventions for depression [40,69]. Richards and Richardson [69] suggest eligibility criteria can be a cause of heterogeneity. This is possible given the variation in the baseline symptomology eligibility criteria of included participants. Some trials recruited participants experiencing minimal to moderate levels of depression, anxiety, or stress [45-47,50]; within some of the same analyses, there were participants who were included if they were experiencing elevated symptoms [48,49]. This variation in symptomology may affect the overall power of the included interventions.

Small sample sizes were apparent. The smallest sample involved 38 participants, within which there were four arms, of which two contained nine participants each [50]. There was limited detail about power calculations to recruit appropriate sample sizes. The forest plots show studies with smaller samples were associated with larger confidence intervals and are less reliable than larger samples. Coupling this with the considerable skew means the findings need to be approached with caution. Completers analysis may bias the calculated effectiveness of interventions as these analyses are likely to produce larger outcome effects [70]. ITT analysis helps avoid selection bias that can occur if only those completing measures at all study time-points are analyzed [71].

The use of participation reminders requires consideration. Interventions trialed in the included studies may not have reminders when administered in a non-trial context. Three studies trialed MoodGym, a freely available online resource that any member of the public can sign up to. In this context, general public users do not receive reminders to complete the intervention—unlike in two included studies [47,50] where participants completed it in a monitored setting.

Funnel plots were briefly inspected to explore possible presence of publication bias; these did not appear to show any unusual asymmetry. This was approached with caution as funnel plot asymmetry should ideally be used when ≥ 10 studies are in analysis [72]. The majority of studies reported positive outcomes on at least one relevant mental symptomology measure. We did not include non-peer reviewed studies and so did not include unpublished data. As reported previously by Farrer [4], not all may have been designed for university students—instead they were sampled to opportunistically trial out the intervention and they may have some differences to the ideal target population. Participants in some studies were already experiencing minimal symptoms upon enrolment, meaning it is problematic to determine how much of an effect the intervention had upon reducing developmental risk of ill mental health. For example, intervention participants in one trial [44] reported a mean pre-post intervention decline of <3 points on the BDI (Beck Depression Inventory); at baseline, participants were already classified as having minimal depressive symptoms. It is difficult

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to address the significance of this small decrease in already minimal symptomatology, and the preventative effect of interventions is further complicated by limited follow-up. No studies assessed utilization of mental health services or diagnosis of mental disorders as an outcome measure, making it difficult to know if interventions reduced the risk of developing a mental disorder or affected mental health service use. For the meta-analyses, only post-intervention short-term data were used due to limited long-term follow-up. We are unsure about the long-term maintenance of improvements in outcomes.

Participants in seven studies received course or financial credit for participation [42-45,47,50,51,55] and eight samples were recruited from psychology degree courses. In sensitivity analyses, one comparison for depression (interventions vs inactive control) did not support the intervention, whereas it did in the overall analysis. This may bias findings as those who participated for credit are likely to be different from students who seek help without an reward incentive for doing so. Likewise psychology students may be more knowledgeable about mental health and the trial process, and thus more receptive to interventions. However, the effects may be greater in students who were not aware of the possibilities of CBT/evidence-based approaches to improve mood. The overrepresentation of psychology students may account for the gender imbalance in recruitment [73]. Young male adults are frequently cited as being less likely to seek out help for their mental health [74,75], and it has been suggested Internet-based interventions could reach out to men [75]. Researchers need to reach out to students in other disciplines and also recruit more males to their trials. Another factor to consider relates to the age range of participants. Unlike Farrer [4], we did not have age as inclusion criteria for the review. The average age calculated from 15 included studies was 22.6 years, and some samples included older adults. This deviates from the traditional age range of university students, and older students may have different mental health needs than typically aged students. Given this, the findings may not be fully generalizable to younger students. Future research would benefit by focusing on sampling students within the 18-25 year age range typical of student populations, or consider age as a moderating factor of intervention effectiveness within this population.

A moderate risk of bias was calculated mostly due to insufficient details reported about trial methodology and outcome measures, meaning we were unclear about several risk of bias outcomes. Only a minority of studies reported their randomization method; this has been reported previously in reviews of CCBT, technology-based interventions, and interventions to improve help-seeking and stigmatizing attitudes and beliefs in university students [4,16,23,76]. Grading the blindness of participants in included studies may be irrelevant given the nature of the types of intervention and trial design [40]. Some studies insufficiently reported their data, which affects the quality of the available evidence. Reporting methodological factors, such as randomization method, concealment, and the blinding of research personnel, is essential to judging trial quality. Researchers in this field are becoming more aware of using CONSORT-EHEALTH guidelines in their publications [31], which addresses several of these methodological factors.

While all included studies explored the statistical significance of outcome data, only a few looked into whether improvements were clinically significant. The few that calculated these found intervention participants showed a higher level of reliable and clinically significant improvement compared to controls [28,46,52,57]. Calculating this provides additional value about the recovery status of participants. It would also be useful to explore whether the improvements reported in the outcome measures correspond to participants' perceptions, as there has been disagreement between severity of symptoms reported on a common depression measure and participants' actual verbal description of symptom severity [77]. This could be done by asking them whether they felt the intervention helped their mental well-being, and might help to address the apparent overreliance on focusing on psychometric measures. One qualitative study found students felt use of an online resource helped them manage their mental well-being during periods of psychological distress [78].

Implications for Practice

As the intervention vs comparison intervention analyses suggested some level of equivalence in outcomes, individuals working in student health, such as welfare advisors and counsellors, may be considering online and technology-based resources they can use to support their students. Some universities do appear interested in using online resources, as several British HEIs have incorporated Web-based interventions into their welfare services, such as the "CALM/Relief" series [79]. None of the included studies assessed whether these interventions had outcomes upon students' academic performance. This is likely to be an important outcome for policymakers given the reputation of their institutions. The best improvements in mental health outcomes may be achieved by combining self-help with face-to-face support [19]. To help address the increased demand for university-based counselling, online resources could be used as a support tool by university students while waiting to see a relevant professional [78]. Similarly, these resources could also be used as an adjunct by students in between counselling appointments.

Implications for Research

Future research needs to consider sufficient sample sizes required for trials, and address the skewed data present in outcome data by either transforming it or using alternative tests. Measurements of help-seeking intentions and behavior, as well as aspects of mental health literacy, would be highly useful in future research as online interventions are often promoted as an alternative to seeking face-to-face help or preventing onset of ill mental health [23]. Researchers would benefit from collaborating with the student population to understand what measurable outcomes are important to them; as these young people are in higher education to obtain a qualification, it is expected that academic performance and retention would be salient outcomes. Mental health difficulties can significantly impair students' academic performance and social functioning; future research should incorporate outcomes reflecting these domains. Gaining user evaluation of interventions through qualitative methods such as interviews and focus groups would also be highly useful in attaining feedback to address the worth

of the intervention and to make interventions more appropriate for student needs [20].

Limitations

All studies were coded by one author (EBD) and were discussed as necessary with CG. The use of one coder may have unintentionally biased the results. There is the possibility that relevant publications may have been missed in the search. However, the search was conducted on several databases and updated through a repeat search, as it had taken some time to conduct the review. Likewise, Farrer's review [4] was searched for additional publications. For meta-analysis, we could not extract data from three included trials, meaning the pool of data from included interventions was smaller. Similarly for the anxiety meta-analyses, measures that may reflect certain distinct aspects of anxiety disorders, such as anxiety sensitivity and social anxiety, were incorporated into one analysis for all anxiety outcomes, which may also have induced bias. The studies trialing the same three interventions had slight variation in how they individually conducted and how participants accessed the intervention. Lintvedt [49] coupled MoodGym with an information-only website, meaning participants received additional information not delivered in the other MoodGym trials [47,50]. The type of intervention may have influenced the reported heterogeneity. In their meta-analysis of Internet-delivered CBT for depression and anxiety, Spek [14] found higher heterogeneity in treatment interventions compared to ones focused on prevention. For our review, there was only one intervention that could clearly be defined as treatment; however, there was variation in the type of universal and selective/indicated interventions being trialed. The level of human support and contact within included interventions is another aspect affecting participant-intervention engagement, which may have impacted effect sizes [14].

Trials of mobile apps for improving mental health outcomes were not included in this review, as it was felt these were still an emerging technology at the time. University students may be a group likely to use apps as they also present many of the same benefits as computer-based/Web-based interventions, but could be more accessible given the popularity of smartphones and tablets. Farrer's review [4] was explored for app-based interventions. A recent review of mental health apps for smartphones/tablets found only five apps that had been trialed [80], one of which was trialed on a student population [81]. However, as found with several in the present review, this trial's methodology and data were not reported clearly and it is unclear whether the intervention was a smartphone app.

Several studies analyzed conducted completers analyses, which may bias review findings as these analyses are likely to produce larger outcome effects [70]. All interventions used different content and multimedia, which could affect how much participants interacted with the intervention and subsequently

their effectiveness [23]. It is difficult to know whether improvements produced by both intervention and active control conditions would have been maintained in the long-term due to limited follow-up. Given that some active controls/comparison interventions produced similar outcome effects to the intervention being trialed, consideration is needed regarding the minimum intervention needed to produce effective change in outcomes. Use of active controls may result in difficulty in understanding the true effect of the experimental intervention upon outcomes [70].

Interventions from different theoretical approaches were combined together for the meta-analysis. Limited numbers of non-CBT trials meant separate analyses exploring different approaches could not be conducted. Although there were only a small number of non-CBT trials within meta-analyses, this could potentially skew findings and so future reviews may want to separately analyze outcomes based on the theoretical underpinning of interventions. Random Effects Models were used for all analyses; however, this may induce bias as it places larger significance on smaller studies [82]. Many trials involved small samples, meaning this bias may have occurred. Finally, no-treatment control and wait-list controls were collapsed into one comparison category (inactive control) for analysis. There were seven trials using wait-list and four using a no-treatment control. This could affect findings as those assigned to wait-list control would have been expecting to receive intervention at some point and may show improvements in their symptomology due to expectation effects.

Conclusions

Overall, this review provides some cautious findings that suggest online and computer-delivered interventions can potentially be beneficial in improving depression, anxiety, and psychological distress outcomes in university students. These interventions are not a panacea for all, but do provide an easily implemented health promotion and prevention strategy that can be easily reached by university students. The benefits of these interventions may potentially help HEIs in promoting good mental health and well-being to its population and support students' academic performance [83]. However, trials in this review did not assess students' academic performance before or after receiving intervention. The findings support the effectiveness of the adaptation of CBT into self-guided, Internet-delivered interventions. However, several methodological shortcomings, including small sample sizes and a large amount of skewed data, mean the findings need to be treated with a high degree of caution. As concluded in a meta-analysis of psycho-educational mental health interventions [70], there needs to be more investigation into the factors influencing intervention effectiveness. Further participant feedback is encouraged to evaluate online and computer-based interventions and to help further tailor interventions to university student populations.

Acknowledgments

EBD is supported by funding from Mental Health Research UK, who were not involved in this review. RM is partly supported by NIHR CLAHRC (National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care)

<http://www.jmir.org/2014/5/e130/>

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East Midlands and NIHR Mindtech HTC (Health Technology Co-operative). The authors would like to thank Professor Clive Adams and Hannah Jones (The University of Nottingham) for their help in the review process and analysis, and Dr Lou Farrer (Australian National University) for providing advice regarding classifying the types of intervention.

Conflicts of Interest

None declared.

Multimedia Appendix 1

Search terms used in online databases.

[PDF File (Adobe PDF File), 305KB - [jmir_v16i5e130_app1.pdf](#)]

Multimedia Appendix 2

List of studies excluded from the review.

[PDF File (Adobe PDF File), 211KB - [jmir_v16i5e130_app2.pdf](#)]

Multimedia Appendix 3

PRISMA checklist.

[PDF File (Adobe PDF File), 249KB - [jmir_v16i5e130_app3.pdf](#)]

Multimedia Appendix 4

Summary of Web-based and computer-delivered interventions to improve depression, anxiety, psychological distress, and stress conducted in university student populations included in the present review.

[PDF File (Adobe PDF File), 119KB - [jmir_v16i5e130_app4.pdf](#)]

Multimedia Appendix 5

Non-skewed data that could not be incorporated into meta-analyses due to being sole study for specific outcomes of interest.

[PDF File (Adobe PDF File), 297KB - [jmir_v16i5e130_app5.pdf](#)]

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Abbreviations

ASI: Anxiety Sensitivity Inventory
BAI: Beck Anxiety Inventory
BDI: Beck Depression Inventory
CBT: Cognitive Behavioral Therapy
CCBT: Computerized Cognitive Behavioral Therapy
CES-D: Center for Epidemiologic Studies Depression Scale
CI: confidence interval
DASS-21: Depression Anxiety and Stress Scale – 21 item version
HEI: higher education institution
ITT: intention-to-treat
K-10: Kessler Distress Scale – 10 item version
PHQ-4: Patient Health Questionnaire – 4 item version
PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSS: Perceived Stress Scale
RAM: Random Effects Model
RCT: Randomized Controlled Trial
SAD: Social Avoidance and Distress scale
SMD: Standardized Mean Difference
TAI: Test Anxiety Inventory
[U]: universal intervention
[I/S]: indicated or selective intervention
[T]: treatment intervention

Edited by G Eysenbach; submitted 29.11.13; peer-reviewed by A Gulliver, C Spates; comments to author 11.02.14; revised version received 14.03.14; accepted 30.03.14; published 16.05.14

Please cite as:

Davies EB, Morriss R, Glazebrook C
Computer-Delivered and Web-Based Interventions to Improve Depression, Anxiety, and Psychological Well-Being of University Students: A Systematic Review and Meta-Analysis
J Med Internet Res 2014;16(5):e130
URL: <http://www.jmir.org/2014/5/e130/>
doi:10.2196/jmir.3142
PMID:

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Appendix 2. Studies relating to mental health literacy conducted in university student populations only.

Author	Aspects of MHL	Sample	Methodology	Findings
Chew-Graham, Rogers, & Yassin (2003)	Knowledge of help-services; attitudes towards help-seeking; self-help strategies used to handle stress	22 medicine students (3-5 th Years), UK, one HEI	Semi-structured interviews analysed using constant comparison analysis	<p>Students had limited knowledge of services available at university. Students described preference for seeking help from family/friends (especially those on same course) rather than university-based services.</p> <p>Perceived stigma of mental health problems was major barrier preventing help-seeking. Students described shame and embarrassment for admitting 'weakness', and were fearful of disclosing to tutors. Students described confidentiality concerns and how mental health would affect their fitness-to-practice or future career opportunities.</p> <p>Talking to family/friends an important coping mechanism; others described activities to manage stress (e.g. exercise, going out), and none reported using alcohol/drugs to self-medicate.</p>
Curtis (2010)	Attitudes towards help-seeking for suicidal ideation	<p>Study 1: 1896 NZ university students, one HEI; 64.8% female, 80% 18-24yrs, range of courses, 80.3% UGs</p> <p>Study 2: 8</p>	<p>Study 1: 22 questions about attitudes towards suicide and awareness of support services</p> <p>Study 2: semi-structured</p>	<p>Study 1:</p> <ul style="list-style-type: none"> • Students more likely to talk to staff about another students' mental well-being than their own • Females more likely to seek help from student services or staff if concerned about themselves or others • Students in lower years more likely to seek help for themselves from a staff member • Students who had contact with others with mental health problems were more likely to believe they could identify suicidal ideation signs, and would contact university-based services if concerned <p>Study 2:</p>

		NZ university students; 5 females	individual interviews to further explore initial findings	<ul style="list-style-type: none"> • Students felt perceived stigma attached to mental illness and help-seeking • Asking for help was 'weakness'; self-reliance counter-balanced this • Support they would provide to student with suicidal ideation would depend on their relationship closeness, perceived risk; how student would react; concerns about talking to student • Professional help 'last resort' after other options exhausted • Mixed perceptions about counselling; many had negative perceptions • University environment perceived as contributor to suicidal ideation and loneliness
Czyz, Horwitz, Eisenberg, Kramer, & King (2013)	Barriers to seeking professional help in students with elevated suicide risk	157 university students, USA, one HEI; 67.5% female, M age 20yrs, 77.1% UGs, all screened for elevated suicide risk	One open-ended question asking participants to describe reasons they had not sought help during two-month study period	<ul style="list-style-type: none"> • Average number of 1.4 reasons for not seeking help. Most endorsed reasons: <ul style="list-style-type: none"> ◦ Professional help not needed as problem is minor or transient (66.2%) ◦ Lack of time (26.2%) ◦ Preference for self-management/self-reliance (17.8%) ◦ Preference for seeking help from family/friends (15.9%) ◦ Pragmatic barriers, e.g. long waiting lists, costs, unaware of help available (15.9%) • Heavy alcohol use associated with increased endorsement of not needing help due to problem being minor/transient
Downs & Eisenberg (2012)	Attitudes towards help-seeking in students at risk of suicide	8487 students, USA, 15 HEIs; 58.9% female, 63.5% 18-	Questions addressed: beliefs in effectiveness of therapy and medication for depression;	<ul style="list-style-type: none"> • Those with high suicide risk were significantly less likely to believe therapy or medication were helpful for depression <ul style="list-style-type: none"> ◦ In students who screened for suicide risk: 37.5% believed therapy was not/a little helpful; 51.7% believed medication was not/a little helpful • Perceived stigma significantly higher than personal stigma; most endorsed stigmatising attitude was perceiving treatment as "sign

		22yrs, UGs and PGs, range of courses Of these 543 screened for elevated suicide risk	perceived and public stigma towards service use; checklist of facilitators and barriers to treatment use	<p>of personal failure”</p> <ul style="list-style-type: none"> Barriers to treatment in suicidal students: <ul style="list-style-type: none"> Preference for self-reliance, 73.3%; stress is normal in college, 52.2%; questioning seriousness of needs, 52.1%; not enough time, 46.7%; financial reasons, 39.8%; concerns about others’ judgements, 34.9%; concerns about helpfulness of treatments, 34.6% Encouragement by others (friends, family) was endorsed by 64.1% as facilitator to treatment Participants perceiving a need a help were four times more likely to have used treatment compared to those with no perceived need Positive associations between belief of therapy effectiveness and use, and medication effectiveness and use Personal stigma associated with lower likelihood of using treatment, but perceived stigma associated with increased likelihood of treatment use
Eisenberg, Golberstein, & Gollust (2007)	Knowledge and attitudes/beliefs about help services and treatments	2785 university students, USA, one HEI; 52% male, 66.1% UGs	Questions reflecting: knowledge about help sources; beliefs about effectiveness of two treatments	<ul style="list-style-type: none"> 49% stated they would know where to go for mental health care 59% aware of counselling service In whole sample: 64% believed therapy is quite/very helpful for depression, and 48% believed medication is quite/very helpful for depression <ul style="list-style-type: none"> For participants with elevated screen who had used services (n=174): 63% felt therapy was quite/very helpful for depression; 60% felt therapy was quite/very helpful for depression For participants with elevated screen who had not used services (n=294): 47% felt therapy was quite/very helpful for depression; 37% felt therapy was quite/very helpful for depression
Eisenberg, Speer, & Hunt (2012)	Attitudes and beliefs about	2350 university	Stigma assessed in	Participants split into two groups: ‘low’ and ‘high’ stigma

	treatment for mental health problems	students, USA, 26 HEIs; 65% female, 70% UGs, varied courses. All screened for depression, anxiety or suicidal ideation and had not sought treatment	three Likert scales Two items about perceived helpfulness of medication and therapy/counselling for depression Question assessing barriers to accessing stated treatments	<ul style="list-style-type: none"> 65% with low stigma perceived treatment as helpful <ul style="list-style-type: none"> Endorsed reasons for not seeking treatment: preference for self-reliance (55%); lack of time (51%); stress is normal in university (51%); questioning seriousness of mental health needs (47%). Appeared to be no difference in those with high stigma whether they perceived treatment as being helpful or unhelpful
Ey, Henning, & Shaw (2000)	Attitudes towards seeking help from university counselling services	315 medicine and dental students, USA, one HEI; 58.7% male, M age 25.8yrs	Attitudes Towards Mental Health Treatment scale (ATMHT) Two scales assessed concerns about counselling	<ul style="list-style-type: none"> Males held fewer concerns about confidentiality and stigma than females All seven stigma/confidentiality items endorsed more than eight items addressing treatment concerns Most endorsed concerns: <ul style="list-style-type: none"> Meeting someone they know at student counselling centre (53.5%); other students' perceptions about their help-seeking (45.5%); personally knowing counsellor now or working with them in future (35.1%); treatment could affect academic or career opportunities (34.8%); time and energy involved in treatment (31.7%)
Furnham, Annis, & Cleridou (2013)	Knowledge and attitudes relating to recognition and causes of mental	370 17-22 yr olds, UK; 52.4% female, all	Nine vignettes describing different mental	Positive identifications of vignette's problem: addiction 74.3%; anorexia 67.8%; OCD 56.5%; ADHD 51.6%; depression 49.9%; schizophrenia 38.9%; bipolar disorder 28.4%; social phobia 18.9%

	disorders, treatments and help-seeking	were students - 57% were university students, 32% secondary school students	disorders: 25 questions relating to identifying vignette problem, prevalence and cause of problem, treatments, help-seeking behaviour and attitudes	<ul style="list-style-type: none"> Females were significantly more likely to correctly identify the problem for all vignettes Participant gender and personal experience of mental health problems associated with MHL Females rated more mental disorders are being more difficult to treat: for all, schizophrenia considered most difficult to treat, with ADHD and social phobia least difficult Males less likely to suggest vignette should seek help <ul style="list-style-type: none"> Bulimia and schizophrenia perceived as requiring most help Social phobia seen as requiring least help Psychiatrist/psychologist most preferred source of help; GP, school counsellor, parents and friends also highly endorsed <ul style="list-style-type: none"> Females more likely to suggest psychiatrist/psychologist and GPs Males more likely to suggest vignette should cope alone Participants with personal experience of mental health problems were more likely to correctly identify disorders
Furnham, Cook, & Batey (2011)	Knowledge of mental disorders, their risk factors and causes, knowledge about interventions or treatments	426 university students, UK, four HEIs; 74.1% female, M age 21.2 yrs, 41% had experiencing of studying subject relating to mental health	List of 97 mental disorders / psychiatric conditions. Asked six questions about whether they had heard of it, their experience of it, ability to describe it/its	<p>Average participant had heard of 37.3% of mental disorders presented. For eight conditions, >75% of sample aware of them. Most familiar disorders: anorexia (86.4% had heard of it); anxiety disorder (85.9%); schizophrenia (82.4%); Parkinson's (81.7%) and autism (80.5%)</p> <ul style="list-style-type: none"> Depressive disorder 70.7%; mood disorder 55.6%; generalised anxiety disorder 43% <p>For nine disorders, >50% could correctly describe them Participants who believed more disorders had known causes felt more mental disorders were curable. Being female, having high openness to experience and studying a relevant subject were associated with awareness of more mental disorders.</p>

			symptoms, its cause, whether people get help for it and its commonality.	
Furnham, Raja, & Khan (2008)	Beliefs about causality, manifestation and treatments for schizophrenia	305 university students, UK and Pakistan (representing British, Pakistani and British Pakistanis), 2 HEIs, 72.5% female, M age 20.3 yrs, prior to psychiatric training	62-item questionnaire about beliefs about nature, aetiology, treatment for and causes of schizophrenia	<p>Significant differences between groups about schizophrenia beliefs:</p> <ul style="list-style-type: none"> British participants had more positive attitudes about schizophrenia compared to other two groups British and Brit-Pakistanis strongly disagreed about labelling of people with schizophrenia; Pakistani participants were more ambiguous Pakistani participants were more likely to believe schizophrenia meant "split personality" and associated with "losing control" Pakistani participants felt people with schizophrenia were more dangerous British participants believed people with schizophrenia were more trustworthy, less dangerous, more predictable and more approachable than other groups Having personal contact with someone experiencing mental illness associated with more favourable attitudes towards people with schizophrenia <p>Significant differences between groups about causes and treatments of schizophrenia:</p> <ul style="list-style-type: none"> British participants tended to disagree with most causal explanations Pakistani participants favoured three causal explanations; other groups did not favour these All groups agreed that society has duty of care for people with

				<p>schizophrenia</p> <ul style="list-style-type: none"> Pakistanis emphasised more upon social factors in cause and cure of schizophrenia
Furnham & Wong (2007)	Attitudes, attributions and beliefs about schizophrenia	200 undergraduate university students, UK and China/Hong Kong, 4 HEIs, 50.5% female, M age 19.28 yrs, all studying medicine, psychology, law or economics	27 questions about beliefs about causes of schizophrenia; 20 questions about behavioural manifestations of schizophrenia; 22 questions about schizophrenia treatment beliefs; questions about knowledge of schizophrenia	<p>Beliefs about causes of schizophrenia:</p> <ul style="list-style-type: none"> British agreed more with statements about beliefs about biological causes, psychological, social and family factors being determinants, and biological factors important in treatment of it Chinese students more likely to attribute schizophrenia to superstitious factors, less agreement with biological causes and more agreement with social causes <p>Beliefs about behavioural manifestations of schizophrenia:</p> <ul style="list-style-type: none"> Chinese more likely to have negative beliefs about people with schizophrenia, British participants more likely to disagree with negative statements and hold less negative attitudes British appeared more knowledgeable about symptoms Chinese students perceived people with schizophrenia to be more dangerous <p>Beliefs about treatment of schizophrenia:</p> <ul style="list-style-type: none"> Chinese believed alternative and religious treatments to be options British more endorsing of biological, sociological and psychological treatments and disagreed with traditional medicine <p>Participants studying medicine were more likely to recognise abnormal symptoms of schizophrenia, and those studying medicine and psychology held stronger superstitious beliefs about treatment</p>
Golberstein, Eisenberg, & Gollust (2008)	Stigma about using mental health services	2782 students, USA, one HEI; 52.6%	Stigma Scale for Receiving Psychological Help	<ul style="list-style-type: none"> Male and older students perceived higher levels of stigma than females and younger students No relationship found between perceived stigma and service use

		female, 44.8% 18-22 yrs		
Lauber, Ajdacic-Gross, Fritschi, Stulz, & Rössler (2005)	Recognition of symptoms of depression and schizophrenia	225 students, Switzerland, one HEI; 52.7% female, M age 26.1 yrs, various courses	Participants presented with 10 symptoms of depression and schizophrenia: half are true symptoms (according to ICD-10) and half are false	<p>For depressive symptoms:</p> <ul style="list-style-type: none"> • Most recognised correct symptoms: depressed mood (93.3%), reduced energy (89.3%), hopelessness about future (85.3%). • Most recognised false symptoms: disorientation (89.7%), disturbed perception (69.3%), vague thinking and distorted speaking (66.5%) <p>For schizophrenia symptoms:</p> <ul style="list-style-type: none"> • Most recognised correct symptoms: auditory hallucinations (70.5%); paranoia (49.6%); delusions (47.8%). • 64.3% thought 'split personality' was a true symptom of schizophrenia <p>Medicine and psychology students more likely to identify correct symptoms of depression and schizophrenia Females more likely to recognise correct depression symptoms Students' recognition of depressive symptoms relatively high; less recognition of schizophrenia Having personal interest in mental health associated with increased recognition</p>
Reavley, McCann, & Jorm (2012)	Knowledge and attitudes relating to recognition and causes of mental disorders, treatments and help-seeking behaviour	774 students and 422 staff at one HEI, Australia. Students: 62% female, M age 24.5 yrs, vocational	Telephone interview involving vignette of 21-yr old with depression. Questions relating to identifying	<p>74% said vignette was experiencing depression; other labels assigned included 'stress' (12%), 'anxiety' (4%), 'psychological problems' (3%)</p> <ul style="list-style-type: none"> • Being female, born in Australia, having higher education level and being older associated with correct recognition <p>83% said they would seek help if they were experiencing similar problem to vignette. Most endorsed help-seeking intentions: GP (26%), friend (25%), parents (14%), family (12%), university counselling (10%)</p>

		and higher education courses, 55% studying for UG or PG degree. Findings here relate to those from students only.	problem in vignette, intention to seek help if they had problem, attitudes and intentions about mental health first aid and interventions	<ul style="list-style-type: none"> Being older, female and being born in Australia associated with greater intention to seek help from professional sources <p>Counselling perceived as most likely to be helpful for depression (95%). Other interventions perceived as helpful: physical activity (94%), relaxation training (94%), cutting down cannabis (90%) or alcohol (89%), psychologist (89%), GP (88%), support group (88%)</p> <ul style="list-style-type: none"> Anti-depressants perceived as helpful by 54%, CBT 57% vitamins 50% <p>Being male, younger, lower level of education, born outside Australia and lack of recognition of depression associated with more stigmatising attitudes towards depression.</p>
Samouilhan & Seabi (2010)	Beliefs about the causes and treatments for mental illness	112 first-yr UG students, South Africa, one HEI; business, law and engineering students, M age 19 yrs, 60% female	Four vignettes describing depression, schizophrenia, substance abuse and anorexia nervosa Asked about aetiology of the mental disorder and treatment options available for it ATSPPHS	<p>Depression:</p> <ul style="list-style-type: none"> Causes: 'Stressful events' most endorsed aetiology (62%) 'Psychotherapy/counselling/support group' most endorsed treatment (47%); 'talking with friends/family' (18%); 'medication' (13%); 'clergy/prayer' (13%) Positive correlations between belief depression was caused by social factors and use of clergy/prayer and self-help as treatments, and belief depression caused by chemical imbalance and use of medication as treatment Negative relationship between belief depression caused by chemical imbalance and use of psychotherapy/counselling as treatment <p>Schizophrenia:</p> <ul style="list-style-type: none"> Causes: 'Chemical imbalance' (36%); 'genetic/inherited problem' (21%) Psychotherapy/counselling/support group' most endorsed treatment (38%); 'talking with friends/family' (18%);

				<p>'medication' (13%); 'clergy/prayer' (13%)</p> <ul style="list-style-type: none"> Positive correlations between belief schizophrenia had spiritual cause and use of clergy/prayer and hospitalisation, and negative correlation with use of medication; negative relationship between belief that stressful events were cause of schizophrenia and hospitalisation as treatment <p>Substance abuse:</p> <ul style="list-style-type: none"> Causes: 'stressful events' (38%); 'weak willed' (27%) Psychotherapy/counselling/support group' most endorsed treatment (50%); 'hospitalisation' (15%); 'self-help/dealing with problem by self' (13%) <p>Anorexia nervosa:</p> <ul style="list-style-type: none"> Causes: 'Social factors' (50%); 'weak willed' (23%) Psychotherapy/counselling/support group' most endorsed treatment (58%); 'medication' (14%); 'hospitalisation' (13%) <p>Sample was not opposed to seeking psychological help but not keen on seeking it for themselves</p>
Smith & Shochet (2011)	Importance of help-seeking for mental health problems and helpfulness of interventions and treatments, and attitudes about mental illness	159 first-year psychology students, Australia, one HEI; 78.7% female, M age 19.4 yrs.	GHSQ Items from MHL measure Two vignettes (via online survey) describing depression and social anxiety.	<p>Knowledge about helpfulness of interventions, importance of help-seeking, confidentiality of healthcare professional-patient relationships, affordability, and beliefs about mental illness accounted for 27% of variance in help-seeking intentions</p> <ul style="list-style-type: none"> MHL components most predictive of help-seeking intentions were: knowledge about interventions, confidentiality, affordability and beliefs about mental illness
Stanley, Mallon, Bell, & Manthorpe (2010)	Service use of students who had committed	20 case studies of students	Psychological autopsy approach.	<p>Findings relating to students' attitudes towards help services:</p> <ul style="list-style-type: none"> Students were hesitant to use services, partly due to lack of

	suicide; included looking at their attitudes towards help services	who had committed suicide, UK. 18 were male students, all 18-35 yrs, range of subjects, majority (95%) UGs	Interviews conducted with their family members, friends and HEI staff	<p>communication and service co-ordination</p> <ul style="list-style-type: none"> • Help-seeking perceived as shameful • Stigma of having mental health problems and subsequent disclosure due to concerns about how it would affect career progression • Stigma attached to anti-depressants <ul style="list-style-type: none"> ◦ Students were concerned anti-depressants would not have immediate effect, resulting in low adherence ◦ Some students preferred non-pharmacological/medical approaches • Talking therapies perceived as more acceptable but still sceptical • Support from peers/friends less stigmatising
Thomas, Caputi, & Wilson (2013)	Attitudes towards professional help seeking for psychological distress	289 first-year psychology students, Australia, one HEI; 78.5% female, M age 19.7 yrs	General Help-Seeking Questionnaire (GHSQ) Disclosure Expectations Scale (DES) ATSPPHS	<p>Students with two specific ATSPPHS attitudes were 1.5 times more likely to intend to seek help should they have a mental health problem:</p> <ul style="list-style-type: none"> • <i>"If I believed that I was having a mental breakdown, my first thought would be to get professional attention"</i> • <i>"A person with an emotional problem is not likely to solve it alone; he/she is likely to solve it with professional help"</i>
Watson (2005)	Attitudes towards help-seeking behaviour and counselling	267 students, USA, one HEI; included student athletes (n=135, 74 female; M	Expectations about Counselling – Brief form (EAC-B) ATSPPHS	<ul style="list-style-type: none"> • Significant differences found between student athletes and non-athletic students: <ul style="list-style-type: none"> ◦ Student athletes had significantly less positive attitudes towards seeking professional help, lower expectations about personal commitment towards counselling and lower expectations towards facilitative conditions in counselling ◦ Student athletes had significantly greater expectations about counsellor expertise

		age 19.1yrs) and non-athletic students (n=132, 70 female; M age 20.7 yrs), range of courses, all UGs		
Youssef et al. (2014)	Knowledge and attitudes towards mental disorders	673 students, 18 English-speaking territories in Caribbean, one HEI; 59% female, M age 20.7yrs, range of courses	Attitudes to Mental Illness Questionnaire (AMIQ) – involves seven vignettes describing different mental disorders	<ul style="list-style-type: none"> • Female and participants who knew someone with mental disorder showed significantly higher knowledge than males and those with no experience <ul style="list-style-type: none"> ◦ Most identified conditions: bipolar disorder, schizophrenia, depression • Limited knowledge about biological or parental aetiological factors <ul style="list-style-type: none"> ◦ Had knowledge level similar to secondary school students • Limited knowledge of symptoms of different mental disorders • Mental illness not perceived as overtly serious; low expectations about recovery; psychological therapy and medicine most relevant treatments • Majority felt people with mental disorders would be unable to succeed and believed they were violent/dangerous

Full references of these studies:

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Appendix 3. Search terms used in online databases (except publisher websites and Google Scholar) (Study One).

NB: Four separate search strings were performed in each database

Search string	Type of intervention		Target change of intervention		Sample
Search 1	"online intervention" OR "internet intervention" OR "internet based intervention" OR "web intervention" OR "web based intervention" OR "online treatment" OR "computer based interventions" OR "computer intervention"	AND	"behaviour change" OR "behavior change" OR "behaviour modification" OR "behavior modification" OR "health behaviour" OR "health behavior"	AND	"undergraduate student" OR "college student" OR "university student" OR "student" OR "higher education" OR "tertiary education"
Search 2	"intervention" AND ("online" OR "web" OR "computer" OR "internet")	AND	"behaviour change" OR "behavior change" OR "behaviour modification" OR "behavior modification" OR "health behaviour" OR "health behavior"	AND	"undergraduate student" OR "college student" OR "university student" OR "student" OR "higher education" OR "tertiary education"
Search 3	"online intervention" OR "internet intervention" OR "internet based intervention" OR "web intervention" OR "web based intervention" OR "online treatment" OR "computer based interventions" OR "computer intervention"	AND	"sexual health" OR "condom" OR "HIV" OR "alcohol" OR "drug" OR "substance use" OR "cannabis" OR "smoking" OR "smoking cessation" OR "physical activity" OR "exercise" OR "obesity" OR "weight" OR "eating"	AND	"undergraduate student" OR "college student" OR "university student" OR "student" OR "higher education" OR "tertiary education"
Search 4	"online intervention" OR "internet intervention" OR "internet based intervention" OR "web intervention" OR "web based intervention" OR "online treatment" OR "computer based interventions" OR "computer intervention"	AND	"mental health" OR "depression" OR "depressive symptoms" OR "anxiety" OR "affective disorder" OR "bipolar" OR "psychosis" OR "social anxiety" OR "exam anxiety" OR "stress" OR "perfectionism" OR "personality" OR "insomnia" OR "sleep" OR "eating disorders" OR "anorexia" OR "bulimia" OR "eating problems" OR "addiction" OR "gambling" OR "self	AND	"undergraduate student" OR "college student" OR "university student" OR "student" OR "higher education" OR "tertiary education"

harm" OR "self-harm"
OR "suicide" OR
"mental health
difficulties"

Databases searched:

Science Direct

CINAHL

ASSIA

SCOPUS

Cochrane Central Library of Controlled Trials (CENTRAL)

EMBASE

PubMed

Web of Science

MedLine

Google Scholar (reduced search terms used)

Appendix 4. Published studies that were identified in the search process and were related to mental health (Study One).

NB: Upon reading the full-texts, these were subsequently excluded and are presented below alongside the reasoning for their exclusion

Publication	Reason for exclusion
Cukrowicz KC, Smith PN, Hohmeister HC, Joiner TE: The moderation of an early intervention program for anxiety and depression by specific psychological symptoms. Journal of Clinical Psychology 2009, 65(4):337-351.	Same sample as Cukrowicz & Joiner (2007), article focused on moderating factors in experimental condition.
Currie SL, McGrath PJ, Day V: Development and usability of an online CBT program for symptoms of moderate depression, anxiety, and stress in post-secondary students. Computers in Human Behavior 2010, 26(6):1419-1426.	Feasibility study prior to trial; not RCT
Davis-McCabe C, Winthrop A: Computerised CBT: University students experiences of using an online self-help programme. Counselling Psychology Review 2010, 25(4):46-55.	Qualitative evaluative study; no RCT conducted/reported in article.
Finkelstein J, Lapshin O: Reducing depression stigma using a web-based program. International Journal of Medical Informatics 2007, 76(10):726-734	Not administered to university students, not an RCT
Freeman E, Barker C, Pistrang N: Outcome of an online mutual support group for college students with psychological problems. CyberPsychology & Behavior 2008, 11(5).	Was RCT but only two conditions - same intervention trialled in both with no no-intervention condition.
Givi HG, Imani H, Agh A, Rik NM, Mehrabadi S: Efficiency of computerized cognitive behavioral therapy versus clinical intervention for the treatment of major depression. [Farsi] Koomesh 2012, 13(2):218-224.	Article translated from Farsi to English, however there were difficulties understanding translated article. Author was contacted but no response.
Haas A, Koestner B, Rosenberg J, Moore D, Garlow SJ, Sedway J, Nicholas L, Hendin H, Mann J, Nemeroff CB: An interactive web-based method of outreach to college students at risk for suicide. Journal of American College Health 2008, 57(1):15-22.	Intervention did not meet intervention criteria for review: intervention was an online screening tool for counselling service use.
Horgan A, McCarthy G, Sweeney J: An Evaluation of an Online Peer Support Forum for University Students With Depressive Symptoms. Archives of Psychiatric Nursing 2013, 27(2):84-89.	Intervention not trialled as an RCT; only one trial condition.
Lange A, Ven J-PQRvd, Schrieken BAL, Bredeweg B, Emmelkamp PMG: Internet-mediated, protocol-driven treatment of psychological dysfunction. Journal of Telemedicine and Telecare 2000, 6(1):15-21.	Intervention did not meet intervention criteria for review: intervention was platform for therapist-involved (guided) therapy

Lau KS, Siong KH, Tang HY, Cheng PW, Cheung KS, Chan SW, Lee PWH, Wong JGWS: An innovative web-based peer support system for medical students in Hong Kong. Medical Teacher 2007, 29(9-10):984-986.	Not RCT, no comparison group, no mental symptomology measures.
Littleton H, Buck K, Rosman L, Grills-Taquechel A: From Survivor to Thriver: A Pilot Study of an Online Program for Rape Victims. Cognitive and Behavioral Practice 2012, 19(2):315-327.	Not an RCT and no comparison group used.
Mailey EL, Wójcicki TR, Motl RW, Hu L, Strauser DR, Collins KD, McAuley E: Internet-delivered physical activity intervention for college students with mental health disorders: a randomized pilot trial. Psychology, Health & Medicine 2010, 15(6):646-659.	Intervention did not meet intervention criteria for review: intervention involved face-to-face meetings and tailored emails between participant and counsellor.
Mitchell N, Dunn K: Pragmatic evaluation of the viability of CCBT self-help for depression in higher education. Counselling & Psychotherapy Research 2007, 7(3):144-150.	Not an RCT and no comparison group used.
Rassau A, Arco L: Effects of chat-based on-line cognitive behavior therapy on study related behavior and anxiety. Behavioural and Cognitive Psychotherapy 2003, 31(3):377-381.	Case study detailing one student
Richards D: Features and benefits of online counselling: Trinity College online mental health community. British Journal of Guidance & Counselling 2009, 37(3):231-242.	Described intervention development only. No RCT conducted.
Richards D, Tangney B: An informal online learning community for student mental health at university: A preliminary investigation. British Journal of Guidance & Counselling 2008, 36(1):81-97.	Not an RCT and no outcome data used
Su W, Fang X, Miller JK, Wang Y: Internet-based intervention for the treatment of online addiction for college students in China: A pilot study of the Healthy Online Self-Helping Center. Cyberpsychology, Behavior, and Social Networking 2011, 14(9):497-503.	Was RCT but intervention did not meet intervention criteria for review: intervention focused on internet addiction, the administered measure assessed internet dependency behaviour and not mental state.
Tillfors M, Carlbring P, Furmark T, Lewenhaupt S, Spak M, Eriksson A, Westling BE, Andersson G: Treating university students with social phobia and public speaking fears: internet delivered self-help with or without live group exposure sessions. Depression and Anxiety 2008, 25(8):708-717.	Was RCT but only two conditions - same intervention trialled in both with no no-intervention condition.
Trockel M, Manber R, Chang V, Thurston A, Taylor CB: An e-mail delivered CBT for sleep-health program for college students: effects on sleep quality and depression symptoms. J Clin Sleep Med 2011, 7(3):276-281.	Not an RCT: participants were not randomised to the two conditions - assignment based on current residence.

**Appendix 5. Non-skewed data which could not be
incorporated into meta-analyses due to being sole study for
specific outcomes of interest (Study One).**

Comparison: Website-based or computer-delivered intervention compared to inactive control

<i>Psychological distress</i>		N	Mean (SD)
Sethi 2010	Intervention	9	17.8 (5.9)
	No treatment control	10	31.1 (3.3)

Comparison: Website-based or computer-delivered intervention compared to active control

<i>Stress</i>		N	Mean (SD)
Rose 2013	Intervention	30	11.93 (3.85)
	Active control	29	14.48 (5.21)

Comparison: Website-based or computer-delivered intervention compared to comparison intervention

<i>Anxiety</i>		N	Mean (SD)
Sethi 2010	Intervention	9	8.6 (4.1)
	Comparison	10	8.0 (3.2)
<i>Depression</i>			
Sethi 2010	Intervention	9	15.7 (4.2)
	Comparison	10	7.2 (3.1)
<i>Psychological distress</i>			
Sethi 2010	Intervention	9	17.8 (5.9)
	Comparison	10	13.8 (2.04)

Appendix 6. Invitation email sent to potential participants (Study Two).

Dear Student,

Invitation to participate in a study to explore emotional health and well-being in undergraduate students

I am a PhD student at the University of Nottingham, and as part of my research I am carrying out a study to investigate students' well-being across a range of courses in the university, and the sort of emotional difficulties they experience. I would appreciate it if you could consider taking part in this study, which involves completing an online survey.

Why have I been approached to take part, and what does the study involve?

This email has been sent to you because you are an undergraduate student registered on one of the courses included in this study. All students registered on your course have been approached to take part in the study and we are inviting students on a range of different courses across two universities to take part. We hope a large number of students decide to take part in the study, which will involve completing an online survey. Your survey answers are kept confidential and are anonymised, and the survey should take no more than 15 minutes to complete. There is also an opportunity to take part in a related interview at a later date.

Attached to this email is an information sheet that provides more detail about the study. It is advised that you read the information to help make your decision about participating.

If you have read this information and would like to take part, then please click on the web address below which will take you to the online survey. If you take part, you can choose to be entered into a prize draw to have a chance at winning £15 Amazon e-voucher.

Thank you for reading this email

To complete the online survey, please click and follow this link:

<https://www.survey.bris.ac.uk/nottingham/emotionalwellbeingsurvey>

If you have any questions about the survey, please feel free to contact me at mcxebd@nottingham.ac.uk.

Many thanks

Eleanor Bethan Davies

PhD student, School of Community Health Sciences

Faculty of Medicine and Health Sciences

University of Nottingham

Appendix 7. Ethics Committee approval letter (Studies Two and Three).

Direct line/e-mail
+44 (0) 115 8231063
Louise.Sabir@nottingham.ac.uk



8th June 2012

Eleanor Bethan Davies
Division of Psychiatry
A floor, South Block
School of Community Health Sciences
QMC Campus
Nottingham University Hospitals
Nottingham
NG7 2UH

Medical School Research Ethics
Committee
Division of Therapeutics &
Molecular Medicine
D Floor, South Block
Queen's Medical Centre
Nottingham
NG7 2UH

Tel: +44 (0) 115 8231063
Fax: +44 (0) 115 8231059

Dear Eleanor

Ethics Reference No: F12012012

Study Title: An investigation into students' and professionals' experiences and perceptions of students' mental health difficulties.

Chief Investigator: Professor Cris Glazebrook, Professor of Health Psychology, Division of Behavioural Sciences, School of Community Health Sciences.

Co Investigators: Professor Richard Morriss, Professor of Psychiatry, Eleanor Bethan Davies, PhD Student, Division of Psychiatry, School of Community Health Sciences.

Duration of Study: 01/07/2012 – 31/03/2013 – 9 months

Thank you for your letter dated 7th June 2012 responding to the issues raised by the committee to Version 3 reviewed on 10th May 2012 and enclosing the following revised documents:

- Application form – EBDavies Version 4 7/06/2012
- Phase 1 – Information Sheet V4 07/06/2012
- Phase 1 – Survey flowchart V4 07/06/2012
- Phase 2 – Information Sheet V4 07/06/2012
- Phase 2 – Invitation Email V4 07/06/2012
- Phase 2 – Portal Advert 07/06/2012
- Response 07-06-12

These have been reviewed and are satisfactory and the study is approved.

Previously reviewed: May 10th 2012

- Application form- EBDavies dated 08/05/2012
- Ethics Committee responses 08/05/2012
- Phase 1 – Follow-up Invitation E-mail V3 08/05/2012
- Phase 1 – Invitation Email V3, 08/05/2012
- Phase 1 – Information Sheet, V3, 08/05/2012
- Phase 1 – List of Schools to be invited 08/05/2012
- Phase 1 – Consent page, V3, 08/05/2012
- Phase 1 – Survey flowchart V3, 08/05/2012
- Phase 2 – Invitation E-mail, V3, 08/05/2012
- Phase 2 – Information sheet, V3, 08/05/2012
- Phase 2 – Consent Form, V3, 08/05/2012
- Phase 2 – Debriefing form, V3, 08/05/2012

- Phase 2 – Interview Guide, V3, 08/05/2012
- Phase 2 – Care Pathways V3, 08/05/2012
- Phase 2 – Pre-Interview survey, V3, 08/05/2012
- Phase 2 – Head of School – Letter of Approval V3, 08/05/2012
- Phase 3 – Invitation V3, 08/05/2012
- Phase 3 – Information Sheet, version 1, 15.12.2011
- Phase 3 – Consent Form, V3, 08/05/2012
- Phase 3 – Information Sheet, V3, 08/05/2012
- Phase 3 – Debriefing form, V3, 08/05/2012
- Phase 3 – Interview guide, V3, 08/05/2012
- Phase 3 – Participant demographics V3, 08/05/2012

Previously Reviewed 12th January 2012:

- Application form dated 12/15/2011
- Study Protocol version 1: 15.12.2011 – E B Davies
- Phase 1 – proposed advert/invitation for survey version 1, 15.12.2011
- Phase 1 – Follow up invitation email version 1, 15.12.2011
- Phase 1 – Information Sheet, version 1, 15.12.2011
- Phase 1 – Survey Flowchart, version 1, 15.12.2011
- Phase 1 – Consent page, version 1 15.12.2011
- Phase 2 – Invitation E-mail, version 1, 15.12.2011
- Phase 2 – Information sheet, version 1, 15.12.2011
- Phase 2 – Consent Form, version 1, 15.12.2011
- Phase 2 – Debriefing form, version 1, 15.12.2011
- Phase 2 – Interview Schedule, version 1, 15.12.2011
- Phase 3 – Invitation email/letter version 1 15.12.2011
- Phase 3 – Information Sheet, version 1, 15.12.2011
- Phase 3 – Consent Form, version 1, 15.12.2011
- Phase 3 – Participant Information Sheet, version 1, 15.12.2011
- Phase 3 – Debriefing form, version 1, 15.12.2011
- Phase 3 – Interview Schedule, version 1, 15.12.2011

Approval is given on the understanding that the Conditions of Approval set out below are followed.

Conditions of Approval

You must follow the protocol agreed and any changes to the protocol will require prior Ethics' Committee approval.

This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.

You promptly inform the Chairman of the Research Ethics Committee of

- (i) Deviations from or changes to the protocol which are made to eliminate immediate hazards to the research subjects.
- (ii) Any changes that increase the risk to subjects and/or affect significantly the conduct of the research.
- (iii) All adverse drug reactions that are both serious and unexpected.

- (iv) New information that may affect adversely the safety of the subjects or the conduct of the study.
- (v) The attached End of Project Progress Report is completed and returned when the study has finished.

Yours sincerely

A handwritten signature in blue ink, reading 'Clodagh Dugdale'. The signature is written in a cursive, flowing style.

Dr Clodagh Dugdale
Chair, Nottingham University Medical School Research Ethics Committee

Appendix 8. Information Sheet (Study Two).

Division of Psychiatry Institute of Mental Health

Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU



Survey investigating prevalence and profile of emotional well-being difficulties in undergraduate students

Name of Investigators:

Prof. Cris Glazebrook, Professor of Health Psychology

Prof. Richard Morriss, Professor of Psychiatry and Community Mental Health

Eleanor Bethan Davies, PhD student

We would like to invite you to take part in a research study conducted by Prof. Cris Glazebrook, Prof. Richard Morriss, and Eleanor Bethan Davies (PhD student), within the School of Community Health Sciences at the University Of Nottingham. Before you decide whether you wish to take part in the study, it is important for you to understand the purpose of the research and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish to do so. If there is anything that is not clear to you or needs clarification, please feel free to contact us. If you would like more information regarding this study, please contact us through the contact details listed at the end of this information sheet. It is your choice to take part in this study.

I am a PhD student at the University Of Nottingham, and as part of my research I am conducting a survey to investigate students' emotional well-being. This survey aims to provide an understanding of the emotional well-being of undergraduate students, and will help inform the development of a new programme to help students experiencing difficulties with their emotional health.

What does the study involve?

This study involves completing a survey, which should take no longer than 15 minutes. You will be asked to complete a questionnaire about yourself, your background, and your degree studies. You will then complete three questionnaires to explore positive and negative mood states that you might have experienced, and you will be asked whether you have experienced any difficulties in your emotional well-being since starting

university. Should you say you have experienced difficulties, you will be asked to complete two further questions. You also have the option to take part in an interview about your emotional well-being and your university experiences. If you complete the survey, you can choose to be entered into a prize-draw with a chance to win an Amazon e-voucher worth £15.

Why have I been approached?

This email has been sent to you because you are an undergraduate student registered in one of the schools/departments included in this study. All students on your course have been invited to participate, and we are targeting several schools/departments across two universities. We hope that more than 300 students will take part in this study, which involves completing an online survey. Any information you provide is kept secure and confidential, and your information will not be traceable back to you. Additionally you will not be identifiable in any data published from the study. If you decide to take part, then you need to click the web link included in the email to access the online survey.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw from the survey at any time without penalty. You will also be asked to recreate a unique identification code, so that you can ask for your information to be withdrawn at a later date should you wish to do so.

What are the benefits of taking part?

There are no direct benefits for you, but the results of this survey will provide information about the types of emotional difficulties in students, inform us of the impact of these difficulties, and provide information about how students seek help. The survey will also provide a foundation for the development of a computer resource designed to educate students about their emotional health and well-being.

There are two disadvantages to taking part in this survey. Firstly, you would be giving up a small amount of your time to complete the survey. It should take no longer than 15 minutes. Secondly, some of the questions in the survey make people think about their own emotional well-being and can occasionally concern people. It is not possible for you to make conclusions about your own emotional well-being from your survey answers alone. If you are concerned about the information provided in this study, there are several contacts listed at the end of the survey that you can seek advice from. You are welcome to contact Eleanor Bethan Davies, the PhD student leading this survey should you feel concerned.

If you have any other questions or concerns about completing the survey, about participating in the study or your own emotional well-being, please feel free to contact Eleanor Bethan Davies. My contact details are listed at the end of this information sheet. Regardless of whether or not you choose to participate in the survey, please feel free to email me if you would like a summary of the survey's findings.

Will my taking part in this study be kept confidential?

Although the survey is designed to ensure you are not traceable, you may have some concerns regarding your anonymity in participating. In the survey, you will be asked to provide some details regarding your age, background and course – but none of this information will make you identifiable to the research team and will not be shared with anyone outside the research team. You will be asked to complete some sensitive questionnaires about your emotional health and well-being. As with all websites, the IP address of your computer/laptop will be automatically logged by the online database software – but you are in no way identifiable or traceable to the research team from your IP address. Your information will be kept confidential

At the end of the survey, you will have the opportunity to partake in further research, enter a prize-draw, or request a results summary. In doing so, you will be asked to enter your email address into a separate survey website. This is to ensure your survey answers cannot be linked to your email address, and so remain untraceable to you. You will only be contacted should you opt-in to one of the three opportunities previously mentioned. All information collected in the survey – including email addresses – are kept on a password-protected secure database that only the lead researcher (EB Davies) has access to. None of the data you provide in this survey will be seen by university staff, your GP/doctor, or any other third-party. Only the research team will see the data collected. Information collected will be kept on this secure database for seven years and will be subsequently destroyed. Should you choose to enter your email address for any of the previously-mentioned options, your email address will be deleted from the database once these respective events have been conducted.

At the beginning of the survey, you will be asked to make your own personal unique identification code. If you change your mind about participating in the survey once it is over, you can email me your unique identification code so that I can remove your survey answers from the database.

What if I have a complaint about the study?

In case you have a complaint about anything to do with the survey, you can contact Eleanor Bethan Davies, the PhD student leading this survey. You may also contact Professor Cris Glazebrook, whose details are listed at the bottom of this sheet. If this achieves no satisfactory outcome, you should then contact the Ethics Committee Secretary, Mrs Louise Sabir, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Centre, Nottingham, NG7 2UH, or email her at louise.sabir@nottingham.ac.uk.

In the unlikely event that you suffer injury to yourself or damage to your property as a result in taking part in this research, the University does have an insurance policy to cover harm arising as a result of the defect in the design of the study.

Who is supervising the research?

The research is being supervised by Prof. Cris Glazebrook and Prof. Richard Morriss in the School of Community Health Sciences, University Of Nottingham. Their contact details are provided at the bottom of this form. This study has been approved by the University Of Nottingham Medical School Ethics Committee.

Thank you for taking the time to read this information

To complete the online survey, please click this link:

<https://www.survey.bris.ac.uk/nottingham/emotionalwellbeingsurvey>

Contact for Further Information

For further information and queries about this survey, please contact:

Eleanor Bethan Davies
PhD student, Division of Psychiatry
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: mcxebd@nottingham.ac.uk
Tel: 0115 74 84293

Supervisors of this study:

Prof. Cris Glazebrook
Professor in Health Psychology
Division of Psychiatry
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Prof. Richard Morriss,
Professor in Psychiatry and Community Mental Health
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: cris.glazebrook@nottingham.ac.uk
Tel: [0115 823 0420](tel:01158230420)

Email: richard.morriss@nottingham.ac.uk
Tel: 0115 823 0427

Appendix 9. Outline of the online survey (Study Two).

Webpage number	Content	Number of items on page
1	Contact details of research team. Participant eligibility outlined.	None (text only)
2	Brief study information (condensed version of the information sheet).	None (text only)
3	Participants enter survey should they consent to participation.	1 (to indicate consent given)
4	Participants provide their day of birth, last three letters of surname and last three digits of postcode, which are combined to produce unique identification code.	3 (to create ID code)
5	Demographic and socioeconomic information collected: gender, age, year of study, school of study, mode of study, fee status, mother and father's level of completed education, mother and father's occupation.	10
6	GAD-7.	8 (1 optional)
7	PHQ-9.	10 (1 optional)
8	MDQ.	15 (2 optional)
9	Participants asked if they have experienced any difficulties in their emotional wellbeing since starting university, whether these have impacted upon their life and whether they have sought any help for their emotional well-being.	4 (3 were optional depending on answer to first question on page)
10	Information regarding withdrawing from study.	1 (optional, to indicate withdrawal from study)
11	<p>Participants provided with opportunity to:</p> <ul style="list-style-type: none"> a) register their interest to take part in another study b) enter prize-draw to win £15 voucher c) register their interest to receive results summary <p><i>NB: Participants submitted their email address into separate surveys if they were interested in these opportunities.</i></p> <p>Debriefing: participants provided with contact details of research team, university health centres, counselling services and other relevant university-based sources. External links to other</p>	None (text only)

websites provided (e.g. Samaritans, Mind,
Papyrus).

Appendix 10. Screenshots of online survey (Study Two).

Survey exploring the emotional well-being of undergraduate students



The University of
Nottingham

Page 1 of 11

Survey investigating prevalence and profile of emotional well-being difficulties in undergraduate students

Investigators:

Eleanor Bethan Davies, PhD Student
Prof. Cris Glazebrook, Professor in Health Psychology
Prof. Richard Morriss, Professor in Psychiatry and Community Mental Health

Thank you for considering taking part in this survey.

Please read the following information before consenting to take part.

I am a PhD student at the University Of Nottingham, wherein my research is focusing on the emotional health and well-being of undergraduate university students. I am inviting you to take part in a survey to investigate the emotional health of students here in Nottingham, the difficulties they may experience and what help they may have sought for them. The survey should take no longer than 15 minutes to complete. This study has been approved by the University Of Nottingham Medical School Ethics Committee.

You must be aged 18 or over and a registered undergraduate student at the University Of Nottingham or Nottingham Trent University to participate in this survey.

Contact details of investigators

Eleanor Bethan Davies
PhD student, Division of Psychiatry
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: mcxebd@nottingham.ac.uk
Tel: 0115 74 84293

Prof. Cris Glazebrook
Professor in Health Psychology
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: cris.glazebrook@nottingham.ac.uk
Tel: 0115 823 0420

Prof. Richard Morriss
Professor in Psychiatry and Community Mental Health
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: richard.morriss@nottingham.ac.uk
Tel: 0115 823 0427

Please click "Continue" to move onto the next webpage and to see more information about the study.

[Continue >](#)

Survey exploring the emotional well-being of undergraduate students



The University of
Nottingham

Page 2 of 11

Further information about the study

The survey involves answering questions about yourself, your background and your current studies. You will then be asked to complete three questionnaires exploring your emotional health and well-being. Finally you will be asked whether you have experienced any difficulties in your emotional health, how these have affected you and what help you may have sought for them. Some of the questions in the survey make people think about their own emotional well-being and can occasionally concern people. It is not possible for you to make conclusions about your own emotional well-being from your survey answers alone. If you are concerned about the information provided in this study, there are several contacts listed at the end of the survey that you can seek advice from.

Taking part in the survey is entirely voluntary, and you are free to leave the survey at any time without penalty. You will be asked to create a unique identification code at the beginning of the survey, so that you can choose to withdraw your information at a later date if you wish to do so. You will need to note this unique identification code down and email it to me should you wish to withdraw.

Although the survey is designed to ensure you are not traceable, you may have some concerns regarding your anonymity in participating. In the survey, you will be asked to provide some details regarding your age, background and course -- but none of this information will make you identifiable to the research team. You will be asked to complete some sensitive questionnaires about your emotional health and well-being. As with all websites, the IP address of your computer/laptop will be automatically logged by the online database software -- but you are in no way identifiable or traceable to the research team from your IP address.

All information that you enter in the survey is anonymised and kept on a password-protected database. No one in the research team will be able to link your information to yourself. Your information will not be seen by your tutor, lecturers, doctor or any other third party. Only Eleanor Bethan Davies will have access to the data from this survey, and no one can pass judgement on your responses. You are encouraged to answer the questionnaire as honestly as possible.

At the end of the survey, you will have the opportunity to partake in further research, enter a prize-draw to win a £15 Amazon e-voucher, or request a results summary. In doing so, you will be asked to enter your email address into a separate survey. This is to ensure your survey answers cannot be linked to your email address, and so remain untraceable to you. All information collected in the survey -- including email addresses -- are kept on a password-protected secure database that only the lead researcher (EB Davies) has access to. None of the data you provide in this survey will be shared with any third-party. Information collected will be kept on this secure database for seven years and will be subsequently destroyed. Should you choose to enter the prize-draw, opt-in for future research, or request a results summary, your email address will be deleted from the database once these respective events have been conducted.

Please click "Continue" to move onto the next webpage.

[Continue >](#)

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Informed consent

If you have understood this information and wish to complete the survey, then please indicate your consent below and then click "Continue" to begin the survey. I confirm that:

- I have read and understood the above information, and the information sheet attached to the email inviting me to take part in this survey.
- From the information sheet, I understand the risks involved in this survey.
- I have been given the opportunity to contact Eleanor Bethan Davies any questions regarding this survey, and have understood the information provided as a result.
- I am aware that I can contact Eleanor Bethan Davies at any time should I have any other concerns or questions about the study.
- I allow the investigators to use my results for any publications or reports that may be produced from this study. I acknowledge that I will not be identifiable in any of these publications or reports.
- I understand I am not identifiable from any information I enter in the survey.
- I am allowed to leave the survey at any time, without giving a reason.

1. On this basis, I consent to take part in the survey:

☐ Yes

If you have selected "Yes", please press "Continue" below to start the survey.

If you do not wish to take part in the survey, please exit the survey now through closing your web browser or tab. Thank you.

Continue >

Create a unique ID code for the survey

As part of the survey, we would like you to make a personal ID code. This ID code is a combination of your answers to the following three questions. This is so we can retrieve your survey answers at a later date if you wish to withdraw from the study.

Please answer the following three questions:

2. Your day of birth (in numbers, e.g. 09)

3. The last three letters of your surname (e.g. for Jones it would be 'nes')

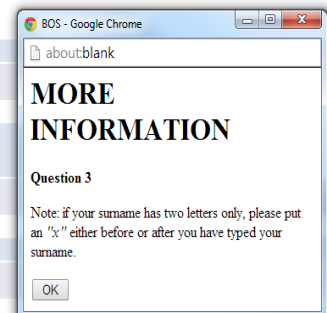
4. The last three digits of postcode (e.g. for NG7 2TU, it would be '2TU')

For example - Richard Smith, date-of-birth 07/08/1990 and lives in NG7 2TU, would have 07ith2tu as his unique ID code.

You are not personally identifiable or traceable from any of your answers to these three questions.

Please click "Continue" to move onto the next webpage.

Continue >



More Info
More Info

Survey exploring the emotional well-being of undergraduate students

Information about you

Firstly we would like to collect some information about you and your course.

5. What is your gender?

- ☐ Male
☐ Female
☐ Transgender
☐ Prefer not to say

6. What is your age?

Select an answer

7. What year of study are you in?

* Note - if you are having a placement in industry year or semester, please also tick the "Placement year or semester" option.
(select all that apply)

- ☐ 1st Year
☐ 2nd Year
☐ 3rd Year
☐ 4th Year
☐ 5th Year
☐ Beyond 5th Year
☐ Placement year or semester
☐ Prefer not to answer / no answer

8. What school or department are you located in at your university?

* The list of schools and departments is divided into two sections: The University of Nottingham (labelled UoN) and Nottingham Trent University (labelled NTU). It would be appreciated if you could ensure you have chosen the correct department at the correct university.

Select an answer

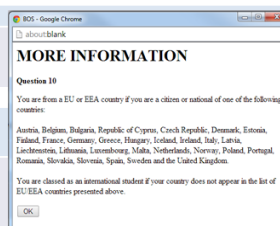
9. What is your type of study?

- ☐ Full-time study
☐ Part-time study
☐ Prefer not to answer / no answer

10. What type of student would you classify yourself as?

Please click "More Info" (on the right hand side of this question) to identify whether your home country is classified as an EU/EEA country.

- ☐ Home student (from England, Scotland, Wales, Northern Ireland, and including the Channel Islands and Isle of Man)
☐ Student from European Union (EU), European Economic Area (EEA), or from Switzerland
☐ International and non-EU student (from country outside of EU)
☐ Prefer not to answer / no answer



More Info

More Info

We would like to collect some brief information about your parents' education and occupational background. If you know about your parents' level of education and their job status, then please complete the following questions:

11. What is the highest level of education your father has completed? (Optional)

Select an answer

12. What is the highest level of education your mother has completed? (Optional)

Select an answer

We would like to know some brief information about your parents' job status. If your parent(s) is unemployed or retired, please enter their previous job position. If you are not sure which category your parents' job is placed in, you are able to enter their occupation into the blank text box.

13. What category best fits your father's occupation? (Optional)

- ☐ Not applicable
☐ Unemployed (including: homemaker, student, retired)
☐ Modern professional occupations (e.g. teacher, nurse, physiotherapist, social worker, welfare officer, artist, musician, police officer (sergeant or above), software designer)
☐ Clerical and intermediate occupations (e.g. secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxiliary, nursery nurse)
☐ Senior managers or administrators (usually responsible for planning, organising and co-ordinating work and for finance, e.g. finance manager, chief executive)
☐ Technical and craft occupations (e.g. motor mechanic, fitter, inspector, plumber, tool maker, electrician, gardener, train driver)
☐ Semi-routine manual and service occupations (e.g. postal worker, machine operative, security guard, caretaker, farm worker, catering assistant, receptionist, sales assistant)
☐ Routine manual and service occupations (e.g. HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter/waitress, bar staff)
☐ Middle or Junior managers (e.g. office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican)
☐ Traditional professional occupations (e.g. accountant, solicitor, medical/general practitioner, scientist, civil/mechanical engineer)
☐ Prefer not to answer / no answer
☐ Other (please specify):

14. What category best fits your mother's occupation? (Optional)

- ☐ Not applicable
☐ Unemployed (including: homemaker, student, retired)
☐ Modern professional occupations (e.g. teacher, nurse, physiotherapist, social worker, welfare officer, artist, musician, police officer (sergeant or above), software designer)
☐ Clerical and intermediate occupations (e.g. secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxiliary, nursery nurse)
☐ Senior managers or administrators (usually responsible for planning, organising and co-ordinating work and for finance, e.g. finance manager, chief executive)
☐ Technical and craft occupations (e.g. motor mechanic, fitter, inspector, plumber, tool maker, electrician, gardener, train driver)
☐ Semi-routine manual and service occupations (e.g. postal worker, machine operative, security guard, caretaker, farm worker, catering assistant, receptionist, sales assistant)
☐ Routine manual and service occupations (e.g. HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter/waitress, bar staff)
☐ Middle or Junior managers (e.g. office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican)
☐ Traditional professional occupations (e.g. accountant, solicitor, medical/general practitioner, scientist, civil/mechanical engineer)
☐ Prefer not to answer / no answer
☐ Other (please specify):

Please click "Continue" to move onto the next webpage.

Continue >



Emotional well-being of students - Questionnaire 1 of 3

15. Over the *last two (2) weeks*, how often have you been bothered by the following problems?

	Frequency			
	Not at all	Several days	More than half the days	Nearly every day
a. Feeling nervous, anxious, or on edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Not being able to stop or control worrying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Worrying too much about different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Trouble relaxing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Being so restless that it is hard to sit still	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Becoming easily annoyed or irritable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Being afraid as if something awful might happen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. If you checked off **any** problems, how **difficult** have these problems made it for you to do your work, take care of things at home, or get along with other people? (*Optional*)

- ☐ Not difficult at all
- ☐ Somewhat difficult
- ☐ Very difficult
- ☐ Extremely difficult

Please click "**Continue**" to move onto the next webpage.

[Continue >](#)

Emotional well-being of students - Questionnaire 2 of 3

17. Over the *last two (2) weeks*, how often have you been bothered by any of the following problems?

	Frequency			
	Not at all	Several days	More than half the days	Nearly every day
a. Little interest or pleasure in doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Feeling down, depressed, or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Trouble falling or staying asleep, or sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Feeling tired or having little energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Poor appetite or overeating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Feeling bad about yourself - or that you are a failure or have let yourself or your family down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Trouble concentrating on things, such as reading the newspaper or watching television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Thoughts that you would be better off dead, or of hurting yourself in some way*	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. If you checked off **any** problems, how **difficult** have these problems made it for you to do your work, take care of things at home, or get along with other people? *(Optional)*

- ☐ Not difficult at all
☐ Somewhat difficult
☐ Very difficult
☐ Extremely difficult

* If you have answered "More than half the days" or "Nearly every day" for Question i, or if many of these questions apply to you, it is advised that you seek help from your GP, counsellor or relevant staff member. Help can be sought from:

Students at the University of Nottingham:

- o Cripps Medical Centre, University Park - 0115 846 8888
- o University Counselling Services, A45 Trent Building, University Park - 0115 951 3695 or counselling.service@nottingham.ac.uk

Students at Nottingham Trent University:

- o Student Health Centre, NTU, Peel Street, Nottingham - 0115 848 6481
- o Sunrise Medical Practice, George Eliot Building (Student Services centre) Clifton campus - 0115 848 3100
- o University Counselling Services - City site: Student Services Centre - 0115 848 6487 or counselling@ntu.ac.uk
- o University Counselling Services - Clifton site: Student Services Centre, George Eliot Building, Clifton Campus - 0115 848 6623, or counselling@ntu.ac.uk
- o University Counselling Services Brackenhurst site: Student Services Centre, Bramley Building, Brackenhurst Campus - 0115 848 6487, or counselling@ntu.ac.uk
- o NTU mental health support team - 0115 848 2085 or mental.health@ntu.ac.uk

Other sources:

- o The Samaritans: 08457 90 90 90 or jo@samaritans.org
- o NHS Direct - provides advice and information about health: 0845 46 47
- o You can also seek help from your personal tutor.

Please click "Continue" to move onto the next webpage.

Continue >



Emotional well-being of students - Questionnaire 3 of 3

19. Has there ever been a period of time when you were not your usual self and...

	Yes	No
a. ...you felt so good or so hyper that other people thought you were not your normal self, or you were so hyper you got into trouble?	<input type="radio"/>	<input type="radio"/>
b. ...you were so irritable that you shouted at people, or started fights or arguments?	<input type="radio"/>	<input type="radio"/>
c. ...you felt much more self-confident than usual?	<input type="radio"/>	<input type="radio"/>
d. ...you got much less sleep than usual and found you didn't really miss it?	<input type="radio"/>	<input type="radio"/>
e. ...you were much more talkative or spoke faster than usual?	<input type="radio"/>	<input type="radio"/>
f. ...thoughts raced through your head or you couldn't slow your mind down?	<input type="radio"/>	<input type="radio"/>
g. ...you were so easily distracted by things around you that you had trouble concentrating or staying on track?	<input type="radio"/>	<input type="radio"/>
h. ...you had much more energy than usual?	<input type="radio"/>	<input type="radio"/>
i. ...you were much more active or did many more things than usual?	<input type="radio"/>	<input type="radio"/>
j. ...you were much more social or outgoing than usual - for example, you telephoned friends in the middle of the night?	<input type="radio"/>	<input type="radio"/>
k. ...you were much more interested in sex than usual?	<input type="radio"/>	<input type="radio"/>
l. ...you did things that were unusual for you or that other people might have thought were excessive, foolish, or risky?	<input type="radio"/>	<input type="radio"/>
m. ...spending money got you or your family into trouble?	<input type="radio"/>	<input type="radio"/>

20. If you checked YES to more than one of the above, have several of these ever happened during the same period of time? Please select one answer only. (Optional)

- ☐ Yes
☐ No

21. How much of a problem did any of these cause you -- like being unable to work; having family, money, or legal troubles; getting into arguments or fights? Please select one answer only. (Optional)

- ☐ No problem
☐ Minor problem
☐ Moderate problem
☐ Serious problem

Please click "Continue" to move onto the next webpage.

Continue >

**22. Have you experienced any difficulties in your emotional well-being* since starting university?**

*Difficulties in emotional well-being are not limited to the following but can include: anxiety and worry, low mood or mood swings, loss of interest/pleasure in usual activities, stress, long-lasting feelings of unhappiness or sadness, constant feelings of being under pressure, and difficulties in concentration and remembering.

- ☐ Yes
☐ No
☐ Unsure
☐ Prefer not to answer / no answer

If you have answered **"No"**, please scroll to the bottom of this webpage and click "Continue" to go to the next webpage of the survey. Thank you.

If you have answered **"Yes"**, we would be grateful if you could complete these two further questions:

23. Have these emotional difficulties impacted upon your life? (Optional)

- ☐ Yes
☐ No
☐ Unsure

If you have answered **"No"**, please scroll down to answer Question 25.

If you have answered **"Yes"**, please answer Questions 24 and 25.

24. Have these emotional difficulties affected you in any of the following ways?

You can also type in any others that are not on the list in the blank textbox below: (Optional)
(select all that apply)

- ☐ Affected my academic work (e.g. grades, ability to do coursework)
☐ Affected my employment or job opportunities
☐ Affected my social life
☐ Affected my relationships with others, including family and friends
☐ Affected my physical health
☐ Affected my behaviour
☐ Affected my sleep (e.g. too much, too little sleep)
☐ Affected my eating habits (e.g. eating too much or too little)
☐ Prefer not to answer / no answer
☐ Other (please specify):

25. Have you sought any advice or help for your emotional well-being?

Please tick all the help/advice sources you have accessed. You can also type in any others that are not on the list in the blank textbox below: (Optional)
(select all that apply)

- ☐ My local health / medical centre -- doctor, nurse, or other healthcare professional
☐ University counselling services
☐ University study support service
☐ University's mental health support worker / advisor / co-ordinator [or equivalent]
☐ Students' Union
☐ University's Student Services centre
☐ My tutor, supervisor, or lecturer
☐ Friends
☐ Family
☐ Chaplaincy service
☐ Used the internet to find more information
☐ Self-help materials, e.g. books, internet programmes
☐ Sought no help or support for my difficulties
☐ Prefer not to answer / no answer
☐ Other (please specify):

Please click **"Continue"** to move onto the next webpage.

Continue >



Withdrawing your information

The survey is anonymous and you will not be identified from your answers. If you have changed your mind about participating, please tick the box to indicate you would like your answers removed from the survey.

If you would like to have your survey answers removed at a later date, please email Eleanor Bethan Davies at mcxebd@nottingham.ac.uk. Please include your personal ID code in the email. If you cannot remember it, Eleanor Bethan Davies will ask for your answers to the three questions presented at the beginning of this survey so that you can be traced.

26. (Optional)
(select all that apply)

☐ I have changed my mind and would like to remove my answers from the survey.

Please click "**Continue**" to submit your survey answers and to move onto the next webpage.

Continue >

Thank you!

**Thank you for completing the survey!****Invitation to participate in an interview about emotional well-being**

We would like to explore the emotional difficulties students can experience at university in more detail and so we would like to invite you to participate in another study. This would involve an interview regarding your emotional well-being whilst at university and what support you feel would be helpful for students who experience emotional difficulties at university.

If you are possibly interested in participating, please click this link to a separate webpage and enter your email address into the box presented:

<https://www.survey.bris.ac.uk/nottingham/wellbeinginterviewinterest>

Your chance to win a voucher!

If you would like to enter a prize-draw to have a chance at winning a £15 e-voucher, please click the link below to an external survey and enter your email address:

<https://www.survey.bris.ac.uk/nottingham/prizedrawcomp>

Interested in the results of this survey?

If you would like to receive a summary report of this study, please click the link below and enter your email address:

<https://www.survey.bris.ac.uk/nottingham/surveyresultsinterest>

Debriefing

If you have any further questions regarding this survey or the study, please feel free contact the research team:

Eleanor Bethan Davies (PhD student) - mcxebd@nottingham.ac.uk, tel: 0115 74 84293

Professor Cris Glazebrook (supervisor) - cris.glazebrook@nottingham.ac.uk, tel: 0115 823 0420.

Professor Richard Morriss (supervisor) - richard.morriss@nottingham.ac.uk

If you are concerned about yours, or a friend's, emotional well-being, then here are some available services in which you can seek advice:

The University of Nottingham:

- **Cripps Health Centre**, University Park - 0115 846 8888 - book appointment with your GP. They also provide [information about how you support your mental health and well-being](#).
- **University Counselling Services**, A45 Trent Building, University Park - 0115 951 3695 or counselling.service@nottingham.ac.uk
- **Student Services Centre**, B Floor Portland Building, University Park - 0115 931 3710, email ssc@nottingham.ac.uk
- **Student Services centre** - Sutton Bonington: A10 Main Building - 0115 951 6004, email ssc-sb@nottingham.ac.uk
- **Student Services centre** - Jubilee Campus: A Floor Amenities Building - 0115 951 3710, email ssc@nottingham.ac.uk
- **University of Nottingham - mental health website**
- **Mental Wealth** is a national scheme promoting positive mental health and well-being at university campuses. The University of Nottingham has set up its own Mental Wealth group - contact mentalwealthnottingham@gmail.com for more information. Please note that the group does not provide professional support.

Nottingham Trent University:

- **Radford Student Medical Centre**, Ilkeston Road - 0115 848 6481 - book appointment with your GP.
- **Sunrise Medical Practice, Clifton** - 0115 848 3100 - book appointment with your GP.
- **University Counselling Services**: City Student Services Centre - 0115 848 6487, or counselling@ntu.ac.uk
- **University Counselling Services**: Clifton Student Services Centre, George Eliot Building, Clifton Campus - 0115 848 6623, or counselling@ntu.ac.uk
- **University Counselling Services**: Brackenhurst Student Services Centre, Bramley Building, Brackenhurst Campus - 0115 848 6487, or counselling@ntu.ac.uk
- **NTU mental health support team** - 0115 848 2085 or mental.health@ntu.ac.uk
- **NTU Student Services** - contact details for centres across the three campuses
- **NTU Student Services - list of relevant contacts**

Other resources and services:

- **The Samaritans** provides confidential and non-judgemental emotional support for people who are experiencing feelings of despair or distress. Tel: 08457 90 90 90 (open 24 hours a day, 7 days a week) or email jo@samaritans.org
- **NHS Direct** - for advice and information about health, can also be contacted via telephone on 0845 46 47
- **Mind** - UK mental health charity, information line: 0300 123 3393 or email info@mind.org.uk. Mind also has an [A to Z of information and advice on their website](#).
- **Rethink: A-Z factsheets about mental health and emotional well-being**
- **Students Against Depression** - information about depression for students
- **NHS Choices - mental health** - information about various mental health topics
- **NightLine** - student-led information and listening service for students based in Nottingham, open between 7pm-8am daily. Tel 0115 951 4985 or email nightlineanon@nottingham.ac.uk. NightLine also runs an [instant messaging service](#) (open 7pm-8pm daily).
- **HopeLine UK** - provides non-judgemental support, advice and information to young people who are worried about their mental health or about others. Tel: 0800 068 41 41 - open 10am-5pm and 7pm-10pm Mon-Fri, and 2pm-5pm on weekends. Email pat@papyrus-uk.org or send text to 07786 209697.
- **SANE** provide emotional support, help and information for a range of mental health issues - via [telephone on 0845 767 800](tel:0845767800) (open 6pm-11pm every day); [via email](#) and through [an online support group](#).
- **Anxiety UK** is a charity that provides [telephone and email](#) support for anyone affected by anxiety issues. Tel: 08444 775 774 (open Mon-Fri 9.30am - 5.30pm)

Please close your web browser or tab when you have finished reading the above information. Thanks again for taking part!

Appendix 11. Information Sheet for participants (Study Three).

Division of Psychiatry
School of Community Health Sciences



Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Exploring students' experiences of difficulties in emotional well-being: A qualitative investigation

Name of Investigators:

Prof. Cris Glazebrook, Professor of Health Psychology

Prof. Richard Morriss, Professor of Psychiatry and Community Mental Health

Eleanor Bethan Davies, PhD student

We would like to invite you to take part in a research study conducted by Prof. Cris Glazebrook, Prof. Richard Morriss, and Eleanor Bethan Davies (PhD student), within the School of Community Health Sciences at the University Of Nottingham. Before you decide whether you wish to take part in the study, it is important for you to understand the purpose of the research and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish to do so.

If you would like more information or if there is anything that needs clarification, please feel free to contact us through the contact details listed at the end of this information sheet. I am a PhD student at the University Of Nottingham, and as part of my research I am conducting a study to investigate students' emotional well-being. This study aims to provide an understanding of the emotional well-being of undergraduate students, and will help inform the development of a new programme to help students experiencing depression.

You previously completed a survey regarding your emotional well-being – thanks again for completing this. At the end of this survey, you indicated that you would be willing to take part in an interview regarding your emotional health and well-being. If you would like to participate in a one-to-one interview, then please read the following information before making a decision.

Background

Being at university can be a stressful time for some students, and can lead to them experiencing difficulties in their emotional well-being. These difficulties can have a detrimental effect on the student, such as affecting their studies and work and can lead to social isolation. These interviews aim to explore the students' experiences of emotional well-being difficulties and help-seeking behaviours sought for these difficulties, so that we can better understand the impact of these difficulties upon students' time in university.

What does the study involve?

The study involves a one-to-one interview between yourself and Eleanor Bethan Davies, the PhD student leading this study. Prior to the interview, we will ask you to complete a short online questionnaire. This questionnaire is to collect personal information about you and your course. You will also be asked to re-complete two questionnaires you completed in the original survey. This is to assess your current well-being and will not be used as a guide for the interview. After this, you will be interviewed at a time and date suitable for you. Interviews will take place in a secure location. You can choose for this interview to be in Hallward Library or in the Graduate Centre at Highfield House (both on University Park campus), at the Institute of Mental Health on Jubilee Campus, or on Sutton Bonington should you be located on that campus. You also have the option of suggesting another location for the interview; however we cannot interview you in your own home. For Nottingham Trent University students, we are not able to book a room there for the interview – however we will reimburse travel expenses to attend an interview at the University Of Nottingham should you wish to take part.

The interview will supplement the issues raised in the survey you previously completed. The interview will explore your time at university, and the emotional difficulties you may have encountered. You will be asked how these difficulties have affected your time in education, such as whether it has affected your studies and social life. We will explore any help you have sought for your emotional difficulties, and whether you experienced any barriers in preventing you from getting help and support. Finally, we will discuss what support and help you would like to receive, and the use of the internet to aid emotional health and well-being.

Why have I been chosen?

You have been invited to participate as you stated that you would be interested in participating in an interview about difficulties in emotional well-being. We are looking to talk to students who may have experienced emotional difficulties since starting university.

Do I have to take part?

It is up to you to decide whether or not to take part in the interview. It is understandable that you may be uncomfortable in talking to someone about your emotional health. If you do decide to take part you will be asked to sign a consent form, and you are still free to withdraw from the interview at any time and without giving a reason. Even after the interview

has finished, you can request for your information to be withdrawn from the study.

What are the possible benefits and disadvantages of taking part?

There are no direct benefits to you, but we hope that the interviews will be used to improve student services and to inform development of a new online resource to educate students about emotional health and well-being. We can explore whether there are enough services to help students, and whether students have difficulties in accessing services that may be beneficial to them. By listening to students, we can understand what their emotional health needs are, and evaluate the systems and services in place to help them. Interviews can also help in designing new services to help students, and help students overcome barriers to access help.

There are two main disadvantages to taking part. Firstly, you would be giving up part of your time for the interview. The interview should last around between 30-to-60 minutes. Secondly, it is understandable that talking about your emotional well-being can be difficult. You may not wish to disclose lots of personal information, or may not want to answer all questions. You might become distressed due to the sensitivity of the information you disclose. The interview questions have been designed in mind to not be distressing. It is your choice in how much you choose to disclose, and you are not under pressure to answer every question. You should only disclose information and answer questions you feel comfortable with. You are allowed to request breaks during the interview if you feel the need to do so, and you are also allowed to stop and leave the interview at any time should you wish to not further participate.

It is possible that you may disclose highly-sensitive information regarding your health. At the end of the interview, you will be provided with a list of services available should you wish to seek help for your emotional well-being difficulties. You are also welcome to contact Eleanor Bethan Davies at any time to further discuss the interview or issues arising from it.

If you are at all concerned with the content of the interview, or the way it was conducted, you are advised to contact Eleanor Bethan Davies. Her contact details are at the end of this form. Any feedback will be acted upon in the best interest of the participants.

Will my taking part in this study be kept confidential?

All information which is collected about you during the study – including the information you provided in the survey and the recorded interviews – will be kept on a password protected database and is strictly confidential. Your information will not be shared with anyone other than the study's investigators. No one else will know you have participated in the study. Your details will not be passed on to your doctor, tutor, parents, or other third party. You will be anonymised in any publications resulting from the survey and this interview.

However in the event that should disclose information which suggests you could be at harm to yourself or others – such as disclosing current suicidal intentions – confidentially would have to be broken and Eleanor Bethan Davies would have to contact her supervisor to assess the situation and organise a response. You would be made aware of what action would be taken before it is undertaken.

What will happen to the results of the research study?

The interviews will be analysed, and used to identify a student profile of emotional well-being. You are welcome to email Eleanor Bethan Davies for a summary of the findings from the interviews and survey. An article based on the interviews will hopefully be submitted for publication; you and your information will not be identified or traceable in any published articles. We anticipate that the interviews will help to form the basis of an internet-based resource designed to educate students about emotional health and well-being, such as depression.

Who is organising and funding the research?

The study is part-funded by Mental Health Research UK, a national charity researching the causes and treatment of mental health conditions.

Who has reviewed the study?

This study has been reviewed and approved by the University of Nottingham Medical School Ethics Committee.

What if I have a complaint about the study?

In case you have a complaint about anything to do with the survey, you can contact Eleanor Bethan Davies, the PhD student leading this survey. You may also contact Professors Cris Glazebrook and Richard Morriss, whose details are listed at the bottom of this sheet. If this achieves no satisfactory outcome, you should then contact the Ethics Committee Secretary, Mrs Louise Sabir, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Centre, Nottingham, NG7 2UH, or email her at louise.sabir@nottingham.ac.uk.

In the unlikely event that you suffer injury to yourself or damage to your property as a result in taking part in this research, the University does have an insurance policy to cover harm arising as a result of the defect in the design of the study.

Contact for Further Information

For further information and queries about this survey, please contact:

Eleanor Bethan Davies

PhD student, Division of Psychiatry

Institute of Mental Health

Triumph Road

University Of Nottingham

Jubilee Campus

Nottingham

NG7 2TU

Email: mcxebd@nottingham.ac.uk

Tel: 0115 74 84293

Supervisors of this study:

Prof. Cris Glazebrook
Professor in Health Psychology
Division of Psychiatry
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: cris.glazebrook@nottingham.ac.uk
[Tel: 0115 823 0420](tel:01158230420)

Prof. Richard Morriss,
*Professor in Psychiatry and
Community Mental Health*
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU

Email: richard.morriss@nottingham.ac.uk
Tel: 0115 823 0427

Appendix 12. Poster advertisement (Study Three).

Participants wanted for interviews investigating emotional well-being of students



I am a PhD student interested in exploring the emotional difficulties students experience at university and would like to invite undergraduate students to participate in an interview study. This interview would involve talking about your emotional well-being whilst at university and what support you feel would be helpful for students who experience emotional difficulties at university. Should you be interviewed, you will be reimbursed with a £15 voucher for your time.

You must be a registered undergraduate student aged 18yrs or older to be considered for participation in the interviews.

If you are interested in participating or would like more information, please access the website or email me through the details printed on the slips at the bottom of this advert.

Thank you!

Eleanor Bethan Davies

PhD student, School of Community Health Sciences



Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Emotional well-being interview

Contact mcxeibd@nottingham.ac.uk

OR <http://tinyurl.com/notts-swb>

Appendix 13. Text-based advert placed on UoN Portal (Study Three).

I am a PhD student interested in exploring the emotional difficulties students can experience at university in detail and so would like to invite undergraduate students to participate in an interview study. This interview would involve talking about your emotional well-being whilst at university and what support you feel would be helpful for students who experience emotional difficulties at university.

If you are interested in participating, please click the following web-link to register your interest through entering your email address into the box presented:

<http://tinyurl.com/notts-swb>

Your email address will be kept secure and not shared with anyone. Should you be interviewed, you will be reimbursed for your time with a £15 voucher.

If you have any questions about the study, please feel free to contact Eleanor Bethan Davies at mcxebd@nottingham.ac.uk

Appendix 14. Interview guide for semi-structured interviews

(Study Three).

NB: PROMPTS/PROBES will be used to explore areas that the participant has not mentioned.

Probes to use:

- ***Could you explain that further?***
- ***I want to make sure I understand what you mean – could you describe that for me again?***
- ***Could you give me an example?***
- ***Why?***
- ***How?***
- ***Could you tell me more about that?***
- ***Could you possibly describe that a little more?***
- ***How did you feel about that?***
- ***What do you mean by ... ?***
- ***Could you talk about that a little bit more?***

Prior to interview

- ✓ Participant completes pre-interview online survey
 - PHQ-9 and GAD-7
 - Collect demographic and course details
- ✓ Ensure researcher has a copy of participant's demographic details for interview
- ✓ Test Dictaphone. Carry spare batteries.

Opening the interview

- ✓ Introduction:
 - Researcher introduces herself to the participant
 - Explains the study to the participant
 - Explains what will happen in the interview
- ✓ Confidentiality – the participant's information will be kept secure and they will not be identifiable from any information they provide during the interview. Their information is kept anonymously.
- ✓ The participant is informed that the interview will be audio-recorded. Informed that the recording will be kept secure and not shared with anyone else.
- ✓ Withdrawal procedure – the participant is allowed to stop and terminate the interview at any time without any penalty.
- ✓ The participant can withdraw their consent at any time without penalty.
- ✓ The participant is allowed to request a break during the interview if necessary.
- ✓ The participant is informed that they do not have to answer all questions posed to them. They are advised to answer questions that they are comfortable in answering.
- ✓ The participant is asked if they have any questions, and informed that they can ask questions or clarify issues throughout the interview. Questions are answered as necessary.
- ✓ The participant is asked to read and sign a consent form.

The participant – personal details and difficulties in their emotional health and well-being

- ☑ Inform participant that the interview will be recorded on a Dictaphone from hereon. Switch Dictaphone on and start recording.
- ☑ I'm going to start the interview by asking you some general details about your course and life here at university:
 - What course are you on, and what year are you currently in?
 - Where are you currently living?
 - Prior to coming to university, where were you living? Where does your family live?
 - What do your parents do for a living?
 - Are you the first in your family to go to university? **OR** Did you parents go to university?
 - Have you been assigned a personal tutor?
 - PROMPT: How often do you see your tutor?
 - How do you feel about the relationship you have with your tutor?

Think back to when you started university. How did progression into student life go for you?

- *If they mention difficulties or problems:* Could you explain these difficulties/problems further?
- PROMPT: Did you encounter any problems in adjusting to university life? *OR*
- PROMPT: Can you tell me a bit more about the emotional difficulties you have mentioned?
- PROMPT: What do you believe led to you experiencing the difficulties / problems you have described?
- PROMPT: Have you sought any help?

So you said you were doing *x course*. How is your course currently going for you?

- PROMPT: Have you had any particular challenges or difficulties during it?
 - Could you tell me a bit more about that?
- PROMPT: Can you tell me a bit more about the emotional difficulties you have experienced?
- PROMPT: When did these difficulties start?
- PROMPT: What do you believe led to you experiencing the difficulties / problems you have described?

You said you were living in *x*. How are you finding that?

- PROMPT: Have there been any particular difficulties?
- PROMPT: Can you tell me a bit more about the emotional difficulties you have experienced?
- PROMPT: When did these difficulties start?
- PROMPT: What do you believe led to you experiencing the difficulties / problems you have described?
- ☑ Have you had any difficulties supporting yourself financially whilst at university?
- ☑ Do you have a job alongside your studies?

Participant's difficulties in their emotional health and well-being*

If this has not been sufficiently covered by previous answers:

- ☑ PROMPT: In your own words, could you describe any difficulties you've experienced in your emotional health and well-being since beginning university?

Difficulties in emotional well-being can include: long-lasting anxiety and worry, low mood /depressed mood or constant mood swings, loss of interest/pleasure in usual activities, stress, long-lasting feelings of unhappiness or sadness, constant feelings of being under pressure, and difficulties in concentration and remembering.

- PROMPT: When did these difficulties start?

**If participant says they have not experienced any difficulties during their time at university, they will be asked alternative questions:*

- Have any of your friends experienced problems since coming to university?
 - PROMPT: Could you explain these problems further?
 - PROMPT: How have these affected your friend(s)?
 - PROMPT: Have their problems affected you at all?
- What problems do you reckon students encounter during university?
- What do you think is the most challenging thing about being in university?
- Have any of your friends had the sort of difficulties you have described?
 - PROMPT: Have you supported your friend at all with their difficulties? What did you do?
- What do you think might help (your friends and) students?

Impact of difficulties upon the student

Reflect answers back onto participant.

- ☑ **So you've said you've had difficulties [*describe the difficulties they had*]. Could you describe how or whether these have impacted upon your life?**
 - PROMPT: Have these difficulties affected your academic studies?
 - PROMPT: Have these difficulties affected your social life, or relationships with others?
 - PROMPT: Have these difficulties affected your leisure time and activities you do outside of your studies? Such as whether you go to any university clubs or societies, or your employment ?
 - PROMPT: Have these difficulties affected your general health at all?
 - How about sleeping, has it affected that at all?
 - Have you noticed any changes in your eating habits, or other behaviours?
- ☑ Have you told anyone else – such as your friends, family, or your tutor – about the difficulties you have experienced?
 - YES- PROMPT: What lead to you deciding to do so?
 - NO - PROMPT: What led you deciding not to tell anyone else?

The student's coping strategies

- ☑ Have you done anything to help you manage the difficulties/problems you have experienced?
 - *Go to a) or b) depending on their answer.*
- a) *If they describe things that have helped them cope:*
 - PROMPT: What have you done to help you cope?
 - PROMPT: How exactly have these strategies helped you cope?
- b) *Or- if they say they haven't done anything:*
 - What do you believe could help you cope with the difficulties you've experienced?

PROMPTS for both answers:

- PROMPT: Have you seen any changes in your behaviour to help you cope?
- PROMPT: Have you seen any changes in your alcohol use or eating habits to help you cope?
- PROMPT: Have you seen any other changes in your behaviour?

The student's experiences of seeking help or advice

- ☑ What help and support services are you aware of here at university?
- ☑ What, if any, help or advice have you sought for your difficulties?
 - *Go to a) or b) depending on their answer*
- a) *If they have sought help:*
 - ☑ How did you find seeking help?
 - PROMPT: Did you have any difficulties in accessing help?
 - PROMPT: Was there anything that aided you in seeking help, or made it easier to do so?
 - PROMPT: Was there anything that hampered you in seeking help, or made it more difficult to do so?
 - PROMPT: Did you have any concerns in seeking help?
 - ☑ Has this help [*as described by participants*] been beneficial to you at all?
 - PROMPT: Why *or* why not?
 - PROMPT: What were the benefits and drawbacks of this type of help for you?
- b) *If they have not sought help:*
 - ☑ Is there any reason why you have not decided to seek help?
 - PROMPT: Is there anything preventing you from seeking help?
 - PROMPT: Is there anything that could aid you in seeking help?
- ☑ What, if any, other types of support would you like to receive for your difficulties?
 - PROMPT: For example, this can be from the university, from your tutor, or from your GP.
- ☑ Have you used any self-help sources to help manage your difficulties? Self-help can include face-to-face support groups, self-help books and leaflets, forums and online groups on the internet.
 - ☑ *YES:* What sort of self-help did you use?
 - PROMPT: How did you find using self-help?
 - PROMPT: Was it beneficial to you at all?
 - PROMPT: Why *or* Why wasn't – it beneficial to you?

- ☑ *No*: Are there any reasons why you have not used self-help sources?
 - PROMPT: Do you have any concerns with using self-help?

To be asked to participants if they have not experienced any problems:

Speaking hypothetically now, say that you did experience symptoms such as the low mood, chronic worrying, and long-lasting feelings of sadness and unhappiness. How would you feel about (or would you seek help) seeking help from a professional – such as a GP/doctor or counsellor? Or speaking to a member of university staff (e.g. lecturer)?

- Would you have any difficulties in going to see professional [such as GP / counsellor] about emotional difficulties?
- How comfortable would you feel about seeing a professional [GP / counsellor] in talking about such emotional difficulties?
 - Would you feel embarrassed about it at all?
 - How would you feel about talking to university staff about it?
- Again speaking hypothetically, in terms of seeking help for health issues, what if anything makes it more difficult for you to seek help?
- Again speaking hypothetically, in terms of seeking help for health issues, what if anything makes it easier for you to seek help?

Closing the interview

- ☑ Are there any other things we haven't discussed that you would like to?
 - *YES*: Discuss as necessary, let participant lead.
 - *NO*: Continue to next step.
- ☑ Inform participant that the interview is finished.
- ☑ Ask participant if they have any questions about the interview:
 - Answer as necessary
- ☑ Stop recording audio on Dictaphone.
- ☑ Debrief participant and provide them with debriefing sheet and list of support services.
- ☑ Inform participant of what will happen next with their information:
 - The interviews will be transcribed and analysed
- ☑ Inform participant that they can contact the researcher at any time with any queries.
- ☑ Inform participant that they can still withdraw their consent at any time through emailing the researcher.
- ☑ Ask participant to read and sign a reimbursement form. Give participant £15 e-voucher for taking part.
- ☑ Thank participant, ask again if they have any questions
 - Answer them as necessary
- ☑ Guide participant in leaving the interview location

Appendix 15. Codebook for qualitative analysis (Study Three).

STUDENTS' UNDERSTANDING OF THEIR POOR MENTAL WELL-BEING

This theme reflects participants' understanding of any symptoms of poor mental wellbeing they may have experienced, and includes aspects relating to how they self-recognise difficulties. This can also include if content of their degree has affected their understanding.

Subthemes:

1. Is distress 'normal' or do I need help?

- a. This subtheme describes how participants' process and work out whether the mental/psychological distress they might have experienced is considered normal or whether it requires intervention from a help source. This subtheme also includes descriptions of how participants may appraise and reframe their mental/psychological distress as being a normal psychological state for them or how other individuals may do this.
- b. Positive example: *"I thought if there's anything, anything like clinically wrong, I think I'd know about it by now and so I, I just kind of passed it aside as everybody gets a bit down sometimes, so it wasn't anything I needed to act on"* (P16)
- c. Exclusions: participant does not describe the process they went through to understand the normality or abnormality of their mental/psychological distress
 - i. Negative example: *"erm I came to uni and that's the first time I was ever diagnosed with anxiety among the depression but I've always had panic attacks from erm mostly in school from having to read in front of the class and things like that cos I think cos quite bullied for having depression anyway so that kind of spiralled into the fear of being around my classmates and stuff"* (P30 – does not mention how she processed symptoms)

2. Questioning the helpfulness of receiving a diagnosis

- a. This subtheme describes experiences from students who either have received a diagnosis of a mental disorder/illness from a healthcare professional, or have had substantial contact with a healthcare professional for their mental health but have not received a formal diagnosis. Participants must describe their experiences in terms of their perceptions and concerns about either: receiving a diagnosis; potentially receiving a diagnosis; or not having a diagnosis to date.
- b. Positive example: *"to me depression's just a label, it doesn't really mean much [...] it's a very broad and vague term. Erm so yeah I'm still just very unsure as to what these conditions actually are, you know, because I've met people*

who've been diagnosed with the same thing but they experience completely different symptoms or you know, so I don't take them too seriously really." (P21)

- c. Exclusions: participants who have not received a diagnosis of a mental disorder/illness or are not in process of receiving a diagnosis.

3. Contact with mental health as part of degree course

- a. This subtheme looks at how some participants have contact with mental health as part of their degree course, or how the content of their degree has aided their understanding of mental health and mental/psychological distress.
- b. Positive example: *"I started a Psych placement, and we were having all these lectures about how to tell when somebody's depressed and it was just like 'yes that's me' [laugh] kind of thing, and maybe I should actually do something about it before I start trying to treat people who are depressed if I can't admit to myself that I'm depressed."* (P13)
- c. Exclusions: Participant does not describe mental health related content on their degree; does not describe how their degree course has aided their awareness or understanding of mental health issues.

4. The links between mental and physical health and well-being

- a. This subtheme describes any links or associations participants made between their mental well-being and physical health – these associations may go both ways (e.g. how physical health problems may impact upon their mental well-being).
- b. Positive example: *"I developed in first year an anxiety disorder [...] and I'm asthmatic, so the more anxious I get, the worse my asthma gets and it's like, I have panic attacks and things."* (P10).
- c. Exclusions: Participant has not described any perceived associations between mental and physical well-being.
 - i. Negative example: "we're meant to have induction loop systems in all the lecturer theatres and the notices are up that they've got them if you ever see the little ear that's a loop system they're very rarely working and they didn't tell me" (P31 – talking about hearing impairments, did not link this to her mental health").

HOW THE NATURE OF STUDENT LIFE IMPACTS UPON MENTAL WELL-BEING

This theme describes how the nature of student life and being at university can impact upon mental well-being. This is categorised into four subthemes:

1. Academic demands and living arrangements impact upon mental well-being

- a. This subtheme describes how academic (e.g. studying, exams) aspects of university and students' living arrangements impact (positively and negatively) upon students' mental well-being. This can include how it impacts upon their sleeping too.
- b. Positive example: *"my room [in halls] is just four small walls it's white wash brick it's almost like being in Belmarsh it's erm [...]when things like start to build up and get to you it's really like you know you're just in these four walls and there's no real sort of release for it I mean I do like sports and stuff to try and help my stress out."* (P35)
- c. Exclusions: participant does not mention how academic demands and living arrangements have impacted upon their mental well-being, or do not relate these factors to their mental well-being.
 - i. Negative example: *"there was a few like issues around exam time when I wasn't sure like 'oh how do I write an essay again?', so I had to kind of go back and revise and read some books about like the styles of writing and things, that was a bit erm difficult cos I hadn't written an essay for over year, but then once I got back into it, it was fine."* (P20)

2. Transition into university life

- a. This subtheme explores issues around the transition into university and how this impacts upon mental well-being. Can include describing specific transitional aspects of entering university.
- b. Positive example: *"I kind of, I knew that coming to university would make that [depression and anxiety] worse because it's a stressful situation and I'm not overly sociable [laughs] so I knew that I'd be more isolated and that'd make it worse, which it did [laughs]"* (P14)
- c. Exclusions: participant does not mention how transitional issues affected mental/psychological well-being, or mentions transitions but does not discuss impact of them upon self.
 - i. Negative example: *"my first year, I think that's probably been---probably the biggest step is between the first and the second year rather than A-Levels and first year, like the workload-wise. Erm like my first work got like seventy-nine percent and I was happy with that – although it doesn't actually count, which is annoying [laughs], erm and then this year's going quite well, I've only submitted one assignment so far, so you know."* (P1)

3. Routines at university

- a. This subtheme describes how routines affect mental well-being; this includes how their student routines (or change/transition in routine) affect their well-being

- b. Positive example: *"I have an awful lot more free time, erm, and sometimes it can be hard to motivate myself to work because most of the rest of the time I don't do much, so, that can be an issue."* (P6)
- c. Exclusions: Participant does not describe how routines affect their well-being or does not relate their routine to their well-being
 - i. Negative example: *"I think like the first year was quite nice in a way I didn't like some of the things but there was nothing that I couldn't do **it was just organising myself was the difficult bit** but yeah it's all good"* (P23)

4. Loneliness and isolation

- a. This subtheme describes how the university environment can induce feelings of (perceived) isolation and loneliness
- b. Positive example: *"I just felt really lonely for quite a while. [...] I was on my own with new people that I didn't really, I didn't know I could trust, if that makes sense – like I didn't know if I was having a bad day, if they would be there for me or you know, it's quite a strange thing. And I'm quite close to my mum as well, so it was hard not being able to talk to her."* (P15)
- c. Exclusions: participant does not describe feelings of loneliness or isolation in relation to being at university
 - i. Negative example: *"I live with one that I lived with last year, Helen, she was like, in halls last year I didn't really talk to her that much cos she was often home at weeks and she did English she was just in her room reading books, and she said 'oh let's us live together next year', and I said okay cos I didn't have anybody else. And now erm, we get along okay but we don't really see each other very often, even though we're in the same house."* (P20 – doesn't explicitly mention loneliness/isolation)

5. Students putting pressure on self to achieve highly

- a. This subtheme describes students' placing pressure on themselves to achieve highly, or how perfectionism and pressure may affect their mental well-being
- b. Positive example: *"I do sort of put myself under immense pressure erm it's not so much the course is difficult it's just the pressure that I put myself under I think that's what causes me difficulties."* (P28).
- c. Exclusions: participant does not describe instances wherein they put pressure on themselves to achieve highly or issues around perfectionism

STUDENTS' COPING AND MANAGEMENT OF MENTAL WELL-BEING

This theme describes strategies used by participants to help cope or manage their mental wellbeing. Strategies can include anything stated by participants (such as self-help, and things they do by themselves), and includes help-seeking from formal (e.g. healthcare professionals) and informal (e.g. friends/family) sources – providing that participant has stated that these methods were explicitly used for coping or managing their mental well-being. This theme will take a more content-analysis approach e.g. counting the frequency of coping/management strategies mentioned. Subthemes will be described if participants describe how specific coping/management strategies have helped them.

- a. Look for: participant describes methods or strategies which they use to help them cope or manage their mental well-being or how they have alleviated symptoms of their mental distress. Participant may have described why coping/management strategy is helpful or unhelpful to them.
- b. Positive example: "I tend to call my sister [to manage panic attacks] [...] I call her straight away, he [boyfriend] just dials the number and sorts it out for me and I can hear her on the phone" (P10 – social support for panic attacks)
- c. Exclude: if coping/management strategies do not explicitly state that they are for helping their mental well-being; if coping/management strategies are for non-mental well-being purposes (e.g. managing physical health).
 - a. Negative example:

Subtheme:

Value students place on social support

This theme describes experiences and perceptions of seeking help or support from family, friends, partners and other personal relationships. Data relating to experience of supporting others with mental health difficulties is included in this theme, providing it is linked to how students' value and give support.

- a. Look out for: any described experiences of social support from family, friends, partners or other formal relationships, to help their mental well-being. This can include both positive and negative values students place on receiving social support.
- b. Positive example: *"I've got two sisters who are my best friends – and when I finally let them in, like I just, I got so much support and love and care, that I finally got that desire back and wanting to do something with my life"* (P10)
- c. Exclude: help or social support from family, friends, partners or other informal relationships which was not for their mental well-being (e.g. physical health).
 - a. Negative example: "the hardest thing was just deciding whether or not I should do it [quit course] cos my mum thought it was a bad idea she thought I'd end up just not coming back to uni" (P24, does not state how family helped).

PERCEIVED CONCERNS ABOUT SEEKING-HELP (IN BOTH HELP-SEEKERS AND NON HELP-SEEKERS)

This theme describes participants' perceptions (e.g. concerns, attitudes) about help-seeking from informal and formal sources (e.g. seeking help from GPs, tutors, counsellors). This includes perceptions/concerns from participants who had sought help from formal or informal sources, either currently or in the past.

- a. Look for: participants describing any perceptions they or others may have about formal help sources and seeking help from these.
- b. Positive example: *"obviously like I was worried [about seeing GP], like, about what she'd say, cos it's different like you thinking things but then somebody else being like 'yep you need to go to counselling', you're just like 'okay'."* (P11, had sought help).
- c. Exclude: Participant does not describe any experiences or perceptions of seeking help for their mental well-being; participant describes awareness of services but doesn't state any perceptions or beliefs about them; experiences of seeking help for other issues but does not relate them to how it affects their help-seeking for mental well-being.
 1. Negative example: *"I think he [tutor] finds it [tutoring] a bit strange like I don't think he's used to it, I think it's his first year of sort of doing this, so it's a bit new to him, but he's nice"* (P15)

Subtheme:

d. Challenges around disclosure of mental state

1. This subtheme describes challenges or issues participants may have about disclosing to any sources of help (formal or informal). This includes perceptions that that mental/psychological distress only warrants intervention if the distress is perceived as severe or how other factors would determine the severity of the distress (e.g. affecting academic performance) and so require help.
2. Positive example: *'it's only been this past time I've really opened up about it cos I don't, I don't like to seem weak, I think that's my main issue, I always want to come across as really strong and I don't like that how I get upset sort of manifests itself in such a way, like it makes me feel a bit pathetic [...] I just feel like pathetic so I don't tend to talk to people about it.'* (P22).
3. Exclude: participant does not describe any challenges/issues/concerns about disclosing their mental state to others, or participant does not describe how severity of symptoms affects help-seeking.

Appendix 16. Ethics Committee approval letter (Study Four).



Direct line/e-mail
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Louise.Sabir@nottingham.ac.uk

16th January 2013

Eleanor Bethan Davies
PhD Student
Room A10 (PhD Office)
Institute of Mental Health
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The University of Nottingham
Triumph Road
Nottingham
NG7 2TU

Faculty of Medicine and Health Sciences

Research Ethics Committee
Division of Respiratory Medicine
D Floor, South Block
Queen's Medical Centre
Nottingham University Hospitals
Nottingham
NG7 2UH

Dear Eleanor

Ethics Reference No: D11072013 IMH

Study Title: Exploring the mental health literacy of University students: does gender have any effect upon literacy?

Lead/Student Investigator: Eleanor Bethan Davies, PhD Student, Division of Psychiatry, Institute of Mental Health.

Chief Investigators/Supervisor: Professor Cris Glazebrook, Professor of Health Psychology, Division of Psychiatry, Institute of Mental Health.

Duration of Study: 1.07.2013-01.06.2014, 11 mths **No of Subjects:** 100+

Thank you for your letter dated 9th January 2014 notifying the Committee of amendment no 1 09.01.2014 as follows:

- John Wardlaw has now completed his BMedSci Project and has left the study.
- Extend study to 01.06.2014 as there were some interesting findings from the project to date which would benefit from further recruitment. The study's sample was over-represented by females and medical students.
- To open recruitment to registered university students at Nottingham Trent University to capture a wider audience and is a population which does not have a medical school.
- University schools which have already been circulated as part of this study will not be contacted again.

the following revised documents were received:

1. UoN FMHS Med Sch Research Ethics Application form dated 09.01.2014.
2. Advert for UoN Portal and Social networking websites v3, 09/01/2014
3. E-mail invitation to send to students v3, 09/01/2014
4. Information sheet – to be presented on the first page of online survey v3, 09/01/2014
5. Recruitment Poster v3, 09/01/2014

These have been reviewed and are satisfactory and the study amendment no 1 9th January 2014 is noted and approved.

Approval is given on the understanding that the Conditions of Approval set out below are followed.

1. You must follow the protocol agreed and inform the Committee of any changes using a notification of amendment form (please request a form).
2. You must notify the Chair of any serious or unexpected event.
3. This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.
4. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely



Dr Clodagh Dugdale
Chair, Nottingham University Medical School Research Ethics Committee

Appendix 17. Email-based study invitation to potential participants (Study Four).

Dear Student,

Invitation to take part in an online survey investigating students' understanding of psychological distress

We are a team consisting of a PhD student and two professors within the Faculty of Medicine at the University of Nottingham, and as part of our research we are carrying out a study to explore students' understanding of psychological distress and help available for this.

We would appreciate it if you could consider taking part in this study, which involves completing a one-off online survey.

Why have I been approached to take part, and what does the study involve?

This email has been sent to you because you are an undergraduate or postgraduate student registered on one of the schools included in this study. All students registered on your course have been approached to take part in the study and we are inviting students across the university to take part. You will need to have a good comprehension of written and verbal English to take part in the study. This study is conducted all online and involves watching a video and answering some questions related to it. It should take you between 15-20 minutes, depending on how thoughtful you are in the survey and how long your answers are.

Attached to this email is an information sheet that provides more detail about the study. It is advised that you read the information to help understand the study and to inform your decision about participating.

If you have read this information and would like to take part, then please click on the web address below which will take you to the online survey. If you take part, you can choose to be entered into a prize draw to have a chance at winning one of 10 Amazon vouchers, ranging between £5 and £20.

Thank you for reading this email

To find out more about the study and to participate in it, please click and follow this link:

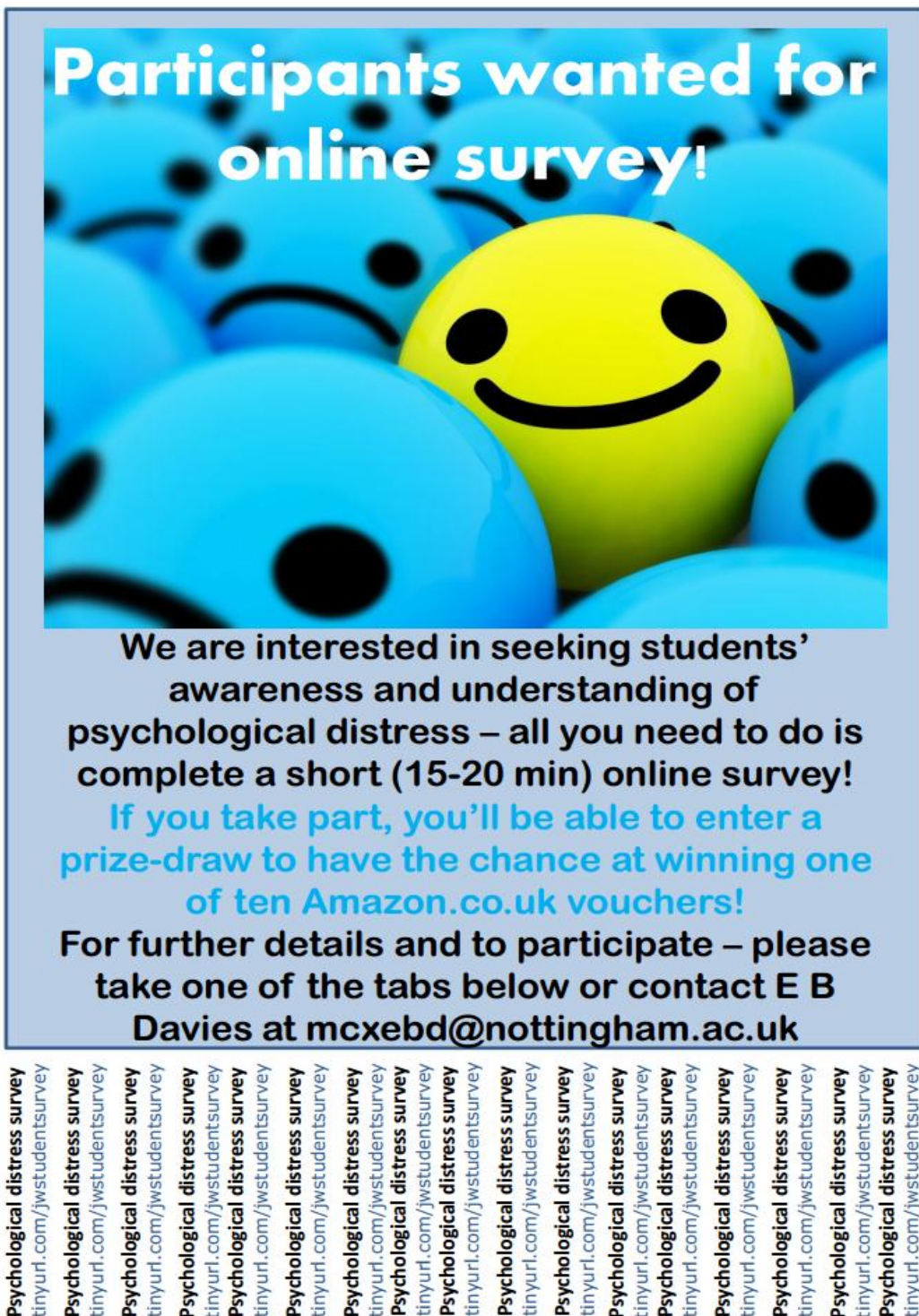
<https://www.surveymonkey.com/s/WFZC6Y9>

If you have any questions about the survey, please feel free to contact Eleanor Bethan Davies at mcxebd@nottingham.ac.uk.

Many thanks

Eleanor Bethan Davies, PhD student, Division of Psychiatry & Applied Psychology, Faculty of Medicine

Appendix 18. Study advertisement poster (Study Four).



**Appendix 19. Advert placed on UoN Portal and social
networking websites (Study Four).**

We want to explore how university students' understand psychological distress and their awareness of help available. All you need to do in this study is watch a video and complete an online survey – there are no face-to-face assessments. Undergraduate and postgraduate students are welcome to take part. If you complete the survey, you will have the chance to enter a prize-draw to win one of ten Amazon.co.uk vouchers. For further information and to take part, please visit <https://www.surveymonkey.com/s/WFZC6Y9>. If you have any questions please contact Bethan Davies at mcxebd@nottingham.ac.uk.

Appendix 20. Information sheet for participants (Study Four).

Division of Psychiatry and Applied Psychology

Faculty of Medicine

The University of Nottingham



Title: Exploring undergraduate students' understanding of psychological distress – a brief study

Name of Investigators:

Eleanor Bethan Davies, PhD student

Professor Cris Glazebrook, Professor of Health Psychology

Information Sheet

We would like to invite you to take part in a research study conducted by Eleanor Bethan Davies and Prof. Cris Glazebrook within the School of Community Health Sciences at the University Of Nottingham. Before you decide whether you wish to take part in the study, it is important for you to understand the purpose of the research and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish to do so.

If you would like more information or if there is anything that needs clarification, please feel free to contact us through the contact details listed at the end of this information sheet. This project aims to investigate undergraduate students' understanding of psychological distress and will help inform the development of an online resource to help students manage their psychological well-being.

Background

Being at university can be a stressful time for some students, and can lead to them experiencing difficulties in their emotional well-being. Despite many students experiencing high levels of psychological distress, only a limited number actively seek out help from their GP or other health professionals for their well-being. An individual's own understanding and awareness of symptoms of psychological distress is an important factor affecting whether they seek help, as is their perceptions of help services available.

What does the study involve and what do I have to do?

This study involves completing an online survey – there are no face-to-face aspects of this study. It should take between 15-20 minutes to complete.

You will be asked to answer questions about yourself and your studies. You will then watch a video and subsequently answering related questions about this video. You will then be asked to complete a questionnaire about moods and feelings that you might have experienced, and be asked to complete a questionnaire about attitudes towards low mood. You will be asked briefly whether yourself or any friends/family have experienced any psychological distress similar to that described in the video. If you complete the

survey, you can choose to be entered into a prize-draw with a chance to win one of ten Amazon e-vouchers worth between £5 and £20.

Why have you been chosen?

This email has been sent to you because you are a registered student registered at the University of Nottingham or Nottingham Trent University. We hope that more than 100 students will take part in this study, which involves completing an online survey. Any information you provide is kept secure and confidential, and your information will not be traceable back to you. Additionally you will not be identifiable in any data published from the study. You do not have to complete the survey.

Do you have to take part?

It is up to you to decide whether or not to take part – the survey is **NOT** mandatory and you are not forced to complete it. If you decide to take part you are still free to withdraw from the survey at any time without penalty. You will also be asked to recreate a unique identification code, so that you can ask for your information to be withdrawn at a later date should you wish to do so. If you wish to withdraw, you will need to let the researchers know by the 1st May 2014 as analysis will have begun after this date and it will not be possible to identify and retrieve your information.

What are the benefits and disadvantages of taking part?

There are no direct benefits for you, but the results of this survey will provide information about how students recognise psychological distress and their perceptions towards seeking out help for distress. The survey will also provide a foundation for the development of a computer resource designed to educate students about psychological distress.

There are two disadvantages to taking part in this survey. Firstly, you would be giving up a small amount of your time to complete the survey. It should take between 15-20 minutes to complete. Secondly, some of the questions in the survey make people think about their own psychological well-being and can occasionally concern people. It is not possible for you to make conclusions about your own psychological well-being from your survey answers alone.

If you are concerned about the information provided in this study, there are several contacts listed at the end of the survey that you can seek advice from. You are welcome to contact Eleanor Bethan Davies, the researcher leading this survey should you feel concerned.

As with all websites, the IP address of your computer/laptop will be automatically logged by the online database software – but you are in no way identifiable or traceable to the research team from your IP address. Your information will be kept confidential. As this study is conducted via the internet, there is always the risk of intrusion by outside agents (i.e. hacking) and therefore the possibility of being identified. However in this study we do not ask you to submit any information which could personally identify you to the answers you provide. If you do choose to enter the prize-draw after you have completed the study, you will be asked to submit your email address on a separate database.

If you have any other questions or concerns about completing the survey, about participating in the study or your own emotional well-being, please feel free to contact

Eleanor Bethan Davies. Their contact details are listed at the end of this document. Regardless of whether or not you choose to participate in the survey, please feel free to email the researchers if you would like a summary of the survey's findings.

Will my taking part in this study be kept confidential?

Although the survey is designed to ensure you are not traceable, you may have some concerns regarding your anonymity in participating. In the survey, you will be asked to provide some details regarding your age, background and course – but none of this information will make you identifiable to the research team and will not be shared with anyone outside the research team. You will be asked to complete some sensitive questionnaires about your emotional health and well-being. As with all websites, the IP address of your computer/laptop will be automatically logged by the online database software – but you are in no way identifiable or traceable to the research team from your IP address.

At the end of the survey, you will have the opportunity to enter a prize-draw, or request a results summary. In doing so, you will be asked to enter your email address into a separate survey website. This is to ensure your survey answers cannot be linked to your email address, and so remain untraceable to you. You will only be contacted should you opt-in to one of the two opportunities previously mentioned. All information collected in the survey – including email addresses – are kept on a password-protected secure database that only the lead researcher (EB Davies) has access to. None of the data you provide in this survey will be seen by university staff, your GP/doctor, or any other third-party. Only the research team will see the data collected. Information collected will be kept on this secure database for seven years and will be subsequently destroyed. Should you choose to enter your email address for any of the previously-mentioned options, your email address will be deleted from the database once these respective events have been conducted.

At the beginning of the survey, you will be asked to make your own personal unique identification code. If you change your mind about participating in the survey once it is over, you can email me your unique identification code so that I can remove your survey answers from the database.

What if I have a complaint about the study?

In case you have a complaint about anything to do with the survey, you can contact

Eleanor Bethan Davies, the research students leading this survey. You may also contact Professor Cris Glazebrook, whose details are listed at the bottom of this sheet. If this achieves no satisfactory outcome, you should then contact the Ethics Committee Secretary, Mrs Louise Sabir, Division of Therapeutics and Molecular Medicine, D Floor, South Block, Queen's Medical Centre, Nottingham, NG7 2UH, or email her at louise.sabir@nottingham.ac.uk.

In the unlikely event that you suffer injury to yourself or damage to your property as a result in taking part in this research, the University does have an insurance policy to cover harm arising as a result of the defect in the design of the study.

Who is supervising the research and who has reviewed it?

The research is being supervised by Prof. Cris Glazebrook in the School of Community Health Sciences, University Of Nottingham. Their contact details are provided at the bottom of this form. This study has been approved by the University Of Nottingham Medical School Ethics Committee (ref: D11072013IMH).

Thank you for taking the time to read this information

For further information and queries about this survey, please contact:

Eleanor Bethan Davies

PhD student, Division of Psychiatry
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU
Email: mcxebd@nottingham.ac.uk
Tel: 0115 74 84293

Prof. Cris Glazebrook

Professor in Health Psychology
Division of Psychiatry
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus

Nottingham

NG7 2TU

Email: cris.glazebrook@nottingham.ac.uk

Tel: 0115 823 0420

Appendix 21. Outline of the online survey and items on each webpage (Study Four).

NB: Other aspects of mental health literacy which were explored, but are not presented in Chapter Five.

Webpage number	Content	Number of measures on page
1	Information about study (e.g. participant eligibility, confidentiality), contact details of researchers	None (text only)
2	Informed consent protocol: participants asked to enter study should they consent to participation.	1 (to indicate consent)
3	Participant creates unique ID code to allow for post-study withdrawal	3 (to create ID)
4	Demographic information collected. This includes final question which quasi-randomised participant to receive either male or female vignette.	10
5	Participant views video-based vignette. Four questions about: whether vignette should seek help, why they should seek help, where they should seek help from and is there anything vignette can do to manage what he/she is experiencing.	4 (one optional)
6	Three Likert scale questions assessing perceived concerns about vignette's symptoms, commonality of vignette's experience and perceived confidence in helping friend presenting similarly. One open-ended question asking how participant would help friend.	4
7	Participant asked what they would do if they had vignette's symptoms, whether they would seek help and who from, barriers to seeking help and whether they would do anything else to help themselves.	5 (three optional)
8	Self-reported personal experience of problem similar to vignette/psychological issues, whether any family members or close friends had experienced similar issues, and exposure to advertisements/campaigns about mental health in previous twelve months.	3
9	PHQ9, two subscales of DSS, and Likert scale assessing perceived treatability of depression	3
11	Participants provided with opportunity to: <ul style="list-style-type: none"> a) enter prize-draw to win one of ten vouchers b) register their interest to receive results summary <i>NB: Participants were asked to submit their email address into separate surveys if they were interested in either of these</i>	None (text only)


opportunities.

Debriefing: participants provided with contact details of research team, how to withdraw from study, university health centres, counselling services, university-based sources, and other relevant services (e.g. The Samaritans, Mind, Papyrus)

Appendix 22. Screenshots of the online survey (Study Four)

The blue banner at the top of each screenshots indicates separate webpages of the survey. NB: This shows the 'Male Vignette' stream of questions.

Information about the study



The University of
Nottingham

UNITED KINGDOM • CHINA • MALAYSIA

We would like to invite you to take part in our research study. Please take time to read the following information carefully and discuss it with friends or family if you wish to do so.

What is the purpose of the study and why I have been invited to take part?

We are interested in exploring students' understanding of psychological distress and perceptions of help that is available in periods of distress. You are not obliged to take part in this study, and your participation is entirely voluntary. **You are able to participate if you meet the following eligibility criteria:**

- You must be aged 18yrs or over
- You must be a currently registered student (under- or post-grad) at the University Of Nottingham or Nottingham Trent University

How long is the study and what will I have to do?

The questionnaire should take approx. 15-20 minutes to complete. You will be presented with a short video about a student and be asked some questions about this. You will be asked questions about psychological distress and low mood that you may have experienced yourself. All aspects of this study are delivered via this online survey and you will not need to meet face-to-face with any of the researchers involved. It would be appreciated if you could answer all the questions presented, but you do not have to answer everything – it is your choice. The survey is a mixture of multiple choice and 'free text' answers – for some questions you will see a range of possible answers, and for others you will be asked to type into a text box. **You will need to be able to watch and hear the following video to be able to answer the questions in this survey.**

Do I have to take part?

Your participation is entirely voluntary. You are free to withdraw from the study at any time without giving a reason. If you start completing the online survey, you can leave by simply closing the browser window/tab. If you decide at a later date to withdraw from the study, you will need to inform us by the 1st May 2014 as we will have begun data analysis after this date.

How will I benefit from participating in this study?

After completing the survey, you will have the chance to submit your email address into a prize-draw to receive one of ten Amazon vouchers, ranging from £5 to £20. Your email address will be kept securely, will not be linked to your survey answers, and not be shared with any third party.

If I need to speak to someone about the research, whom should I contact?

If you have any questions or concerns about the study, please contact Eleanor Davies (contact details listed below). If you have any health concerns that you would like to discuss with someone not associated with the study, please contact your GP at your local surgery (e.g. Cripps Medical Centre at UoN; medical centres at NTU City and Clifton campuses) or ring NHS Direct on 111 (calls are free of charge).

Confidentiality

In this online survey your information is anonymous and untraceable to you. You will be asked to provide some details regarding your age, background and course – but none of this information will make you identifiable to the research team. You will be asked to make a unique identifier based on digits from your surname, date of birth and postcode but you cannot be identified from this. Only members of the research team will have access to the information you provide, and it is kept confidential and secure within the research team. As with all websites, the IP address of your computer/laptop will be automatically logged by the online database software – but we cannot identify you from this.

How will we use the results of this research?

The findings will contribute towards development of an online resource being designed to educate and aid management of psychological distress in university students. If you would like more information about this, please email Eleanor Davies at mcxebd@nottingham.ac.uk

Who has reviewed the study and am I able to know its findings?

This study has been approved by the University Of Nottingham Medical School ethics committee (ref: D11072013IMH). If you would like a summary of the results, please submit your email address on a separate survey presented at the end of the online survey

Further information

If you would like further information about the study, please find a more [detailed information sheet available here](#) (opens in external window/tab) or contact the research team at the details listed below.

Eleanor Davies (PhD student) and Professor Cris Glazebrook
Institute of Mental Health
Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU
Email: mcxebd@nottingham.ac.uk and cris.glazebrook@nottingham.ac.uk

Next

Consent to participate

If you have understood this information and wish to complete the survey, then please indicate your consent below and then click "next" to begin the survey.

I confirm that:

1. I confirm that I have read and understand the information for the above study and have had the opportunity to ask the researchers questions about it. I have understood the information provided as a result.
2. I am aware I can contact the researchers at any point should I have any other concerns or questions about the study.
3. From the presented information, I understand the risks involved in this survey.
4. I understand that participation is voluntary and that I am free to withdraw at any time, without giving any reason. Should I wish to withdraw after I have completed the survey, I understand that I need to contact Eleanor Davies (mcxeibd@nottingham.ac.uk) by 1st May 2014 if I wish to have my information withdrawn from the study.
5. I allow the investigators to use my results for any publications or reports that may be produced from this study.
6. I understand that I will be asked to complete an online survey and that the data will be used for a PhD student's research project and will contribute towards development of an online resource.
7. I understand that my data from this study will be anonymous and that only members of the research team will have access to the data.
8. I am over the age of 18.
9. I am a registered undergraduate or postgraduate student at the University Of Nottingham or Nottingham Trent University.

*1. On this basis, I consent to take part in the survey:

- ☐ Yes
☐ No

If you have selected "Yes", please press "next" below to start the survey. If you do not wish to take part in the survey, please exit the survey now through closing your web browser or tab. Thank you.

It is best to complete the survey all in one go (will take approx. 15-20 minutes) as the browser will time out after a certain period of inactivity.

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Participant's ID code

As part of the survey, we would like you to make a personal ID code. This ID code is a combination of your answers to the following three questions. This is so we can retrieve your survey answers at a later date if you wish to withdraw from the study.

*2. Please answer the following three questions:

Your day of birth (in numbers, e.g. 09)

The last three letters of your surname (e.g. for Jones it would be 'nes')

The last three digits of your postcode (e.g. for NG7 2TU, it would be '2TU')

For example - Richard Smith, date-of-birth 07/08/1990 and lives in NG7 2TU, would have 07ith2tu as his unique ID code.

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Information about yourself

To provide some information about who is completing this survey, we would appreciate it if you could answer the following questions. If you do not want to answer, please select the "prefer not to answer" option available. **Please note that we cannot personally identify you from any of the information you provide in this online survey.**

***3. What is your self described gender?**

- ☐ Male
☐ Female

***4. How old are you?**

Other (please type in numbers, i.e. '31', '48')

***5. Which university do you attend?**

- ☐ The University of Nottingham
☐ Nottingham Trent University

***6. What school / department is your degree based in? (NB: if doing joint honours, please select your first subject; if unsure which school/division/department you are based in, please write it in box below)**

Other (please specify if not on list)

***7. What year of study are you in?**

- ☐ 1st Yr
☐ 2nd Yr
☐ 3rd Yr
☐ 4th Yr
☐ 5th Yr +
☐ Prefer not to answer

***8. What is your type of study?**

- ☐ Undergraduate
☐ Postgraduate (taught)
☐ Postgraduate (research/doctorate)
☐ Prefer not to answer

***9. What type of student would you classify yourself as?**

- ☐ Home student (from England, Scotland, Wales, Northern Ireland, and including the Channel Islands and Isle of Man)
☐ Student from European Union (EU), European Economic Area (EEA), or from Switzerland
☐ International and non-EU student (from country outside of EU)
☐ Prefer not to answer

You are from an EU or EEA country if you are a citizen or national of one of the following countries:

Austria, Belgium, Bulgaria, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

You are classed as an international student if your country does not appear in the list of EU/EEA countries presented above.

***10. What is the highest level of education your father has completed?**

- ☐ Did not complete secondary school / compulsory education
☐ Secondary School (e.g. CSE, GCSE, O-Level)
☐ Further education (e.g. A-Level, B-TEC, college, sixth form)
☐ Undergraduate (e.g. Bachelor's degree)
☐ Postgraduate (e.g. Master's degree, postgraduate certificate or diplomas)
☐ Doctoral degree (e.g. PhD, doctorate in specific subjects)
☐ Prefer not to answer

***11. What is the highest level of education your mother has completed?**

- ☐ Did not complete secondary school / compulsory education
☐ Secondary School (e.g. CSE, GCSE, O-Level)
☐ Further education (e.g. A-Level, B-TEC, college, sixth form)
☐ Undergraduate (e.g. Bachelor's degree)
☐ Postgraduate (e.g. Master's degree, postgraduate certificate or diplomas)
☐ Doctoral degree (e.g. PhD, doctorate in specific subjects)
☐ Prefer not to answer

***12. Which month were you born in?**

Please note that during this survey you will not be able to return to previous pages once you have completed them - so please make sure you have answered the necessary questions. Thank you.

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Vignette video - male

You will be asked a series of questions related to the video below. These questions are presented either with a range of possible answers from which you choose one (similar to multiple choice), or as a text-box where you can write as little or as much as you like. If you cannot think of an answer, you are welcome to type "N/A" or "no answer" into the box – however we would appreciate it if you could provide an answer for every question.

You will need to be able to watch and hear the following video to be able to answer the questions in this survey.
Please note this embedded video will not work if viewing it on the iPad.

Please watch the following video. If you cannot view it in this embedded window, please [click here](#) to view it in a separate window/tab and return to this survey afterwards.



If you have not been able to watch the video on your computer or device, please try accessing the survey again on a different computer. You will only be able to answer the questions in this survey if you have watched the video.

*13. Do you think Mark should seek help for what he is experiencing?

- ☐ Yes
☐ No
☐ Unsure

*14. Please explain your answer, i.e. why you feel Mark should or should not seek help, or if unsure explain why you feel unsure

If you answered "Yes" to Q13, please answer Qs 15 and 16.

If you answered "No" or "Unsure" to Q13, please answer Q16 only.

15. If you answered 'YES': where should Mark seek help from?

*16. Is there anything Mark could do by himself to help with what he is experiencing?



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***17. What symptoms that Mark described do you feel are the most concerning or worrying?**

	Very concerning	Slightly concerning	Neither very or not concerning (neutral)	Not very concerning	Not at all a concern
Feeling sad/miserable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excessive tiredness and struggling to sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weight loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of appetite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poorer exam results	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impaired concentration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inability to make decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aches/pains in limbs and body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Little interest/pleasure in activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***18. Do you think Mark's experiences are common in university students?**

Very common	Common	Neither common or uncommon/rare	Not very common	Rare
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***19. How confident would you be in your ability to help a friend who was experiencing similar symptoms to Mark?**

Very confident	Fairly confident	Slightly confident	Not confident at all
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***20. If Mark was your friend, what would you do (if anything) to help him?**

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***21. If you were experiencing symptoms similar to Mark, what would you do?**

***22. Would you seek help?**

- ☐ Yes
☐ No
☐ Unsure

If you answered 'YES': please answer Qs 23, 24 and 25.

If you answered 'NO' or 'UNSURE': please answer Qs 24 and 25.

23. If you answered 'YES' - where would you seek help from?

24. Would there be anything stopping you from seeking help? Please describe any issues if so.

25. Is there anything you would do to help yourself?

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Your background - male vignette

***26. Have you ever experienced difficulties similar to Mark's, or other psychological issues?**

- ☐ Yes
☐ No
☐ Unsure

If YES - did you seek help for your difficulties? If so, where did you seek help from?

***27. Have you had any family members or close friends who have experience difficulties similar to Mark's, or other psychological issues?**

- ☐ Yes
☐ No
☐ Unsure

If YES - what difficulties did they experience?

***28. Have you seen, read or heard any advertisements or campaigns about mental health issues in the past 12 months?**

- ☐ Yes
☐ No
☐ Unsure

If YES - what advertisements did you see/read/hear?



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Your psychological well-being

*29. Over the last 2 weeks, how often have you been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Feeling down, depressed, or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Trouble falling/staying asleep, sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Feeling tired or having little energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Poor appetite or overeating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Moving or speaking so slowly that other people could have noticed; or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Thoughts that you would be better off dead or of hurting yourself in some way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you have answered "More than half the days" or "Nearly every day" for Question 9, or if many of these questions apply to you, it is advised that you seek help from your GP, counsellor or relevant staff member. Help can be sought from:

University of Nottingham:

- o Cripps Medical Centre, University Park - 0115 846 8888, www.unhs.co.uk/unhs/the-university-of-nottingham-health-service.aspx
- o Kegworth Medical Practice, The Dragwell, Kegworth (for students at Sutton Bonnington) - 01509 674919, www.kegworth.net
- o University Counselling Services, The Orchards, University Park - 0115 951 3695 or counselling.service@nottingham.ac.uk

Nottingham Trent University:

- o Student Health Centre, NTU City site, Peel Street, Nottingham - 0115 848 6481
- o Sunrise Medical Practice, George Eliot Building (Student Services centre) Clifton campus - 0115 848 3100
- o Southwell Medical Centre, The Ropewalk, Southwell - 01636 813 561 (for students at Brackenhurst campus)
- o University Counselling Services - City site: Student Services Centre - 0115 848 6487 or counselling@ntu.ac.uk
- o University Counselling Services – Clifton site: Student Services Centre, George Eliot Building, Clifton Campus - 0115 848 6623, or counselling@ntu.ac.uk
- o University Counselling Services - Brackenhurst site: Student Services Centre, Bramley Building, Brackenhurst Campus - 0115 848 6487, or counselling@ntu.ac.uk
- o NTU mental health support team - 0115 848 2085 or mental.health@ntu.ac.uk

Other sources:

- o The Samaritans: 08457 90 90 90 or jo@samaritans.org
- o NHS Direct – provides advice and information about health: 111
- o Nottingham Mental Health Helpline - provides a listening ear and emotional support for individuals, or carers of people, experiencing mental distress. Call 0800 561 0072 or text 07506 628 693 for a call back. Helpline is open 5pm - 9am Monday to Friday, and 24 hours a day at weekends and during bank holidays
- o You can also seek help from your personal tutor.
- o A number of other resources are also presented at the end of this online survey.

*30. Please answer the following statements about your attitudes and beliefs towards people experiencing depression.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
1. People with depression could snap out of it if they wanted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Depression is a sign of personal weakness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Depression is not a real medical illness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. People with depression are dangerous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. It is best to avoid people with depression so you don't become depressed yourself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. People with depression are unpredictable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. If I had depression I would not tell anyone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I would not employ someone if I knew they had been depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I would not vote for a politician if I knew they had been depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*31. Please answer the following statements about other people's attitudes and beliefs towards people experiencing depression.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
1. Most people believe that people with depression could snap out of it if they wanted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Most people believe that depression is a sign of personal weakness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Most people believe that depression is not a medical illness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Most people believe that people with depression are dangerous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Most people believe that it is best to avoid people with depression so that you don't become depressed yourself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Most people believe that people with depression are unpredictable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. If they had depression, most people would not tell anyone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Most people would not employ someone they knew had been depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Most people would not vote for a politician they knew had been depressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*32. Do you believe depression can be effectively treated? Please rate on the following scale ranging from 100% (can always be effectively treated) to 0% (never be effectively treated)

1 - Depression can always be effectively treated (100%)	2	3	4	5 - Depression can sometimes be effectively treated (50%)	6	7	8	9	10 - Depression can never be effectively treated (0%)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thank you for your time!

Thank you for completing the survey! The purpose of this survey was to explore factors influencing students' understanding and recognition of psychological distress, as well as help available for such difficulties. The student in the video was an actor who was describing symptoms of depression – this was based on research exploring the experiences of young people with depression.

Please click "DONE" at the bottom of this page to submit your answers!

Your chance to win a voucher!

If you would like to enter a prize-draw to have a chance at winning one of ten Amazon e-vouchers – 1 x £20 or 3 x £10 or 6 x £5, [please click this link to go to an external survey and enter your email address](#)

Interested in the results of this survey?

If you would like to receive a summary report of this study, [please click this link to go to an external survey and enter your email address](#).

If you have any further questions regarding this survey or the study, or would like to request your answers be removed from the survey (please contact us by 1st May 2014), please feel free to contact the research team:
Eleanor Bethan Davies (PhD student) - mcxebd@nottingham.ac.uk, tel: 0115 74 84293
Professor Cris Glazebrook (supervisor) - cris.glazebrook@nottingham.ac.uk, tel: 0115 823 0420.

If you are concerned about yours, or a friend's, psychological well-being, then here are some available services in which you can seek advice:

The University of Nottingham:

- Cripps Health Centre, University Park - 0115 846 8888 - book appointment with your GP. They also provide information about how you support your mental health and well-being.

- [University Counselling Services](#), The Meadows, University Park - 0115 951 3695 or counselling.service@nottingham.ac.uk

- Student Services Centre, B Floor Portland Building, University Park - 0115 931 3710, email ssc@nottingham.ac.uk

- Student Services centre - Sutton Bonington: A10 Main Building - 0115 951 6004, email ssc-sb@nottingham.ac.uk

- Student Services centre - Jubilee Campus: A Floor Amenities Building - 0115 951 3710, email ssc@nottingham.ac.uk

- [The University of Nottingham Healthy U website](#)

- [University of Nottingham – Mental Wealth](#) - Mental Wealth is a national scheme promoting positive mental health and well-being at university campuses. The University of Nottingham has set up its own Mental Wealth group - contact mentalwealthnottingham@gmail.com for more information. Please note that the group does not provide professional support.

Nottingham Trent University:

- o Student Health Centre, NTU City site, Peel Street, Nottingham - 0115 848 6481

- o Sunrise Medical Practice, George Eliot Building (Student Services centre) Clifton campus - 0115 848 3100

- o Southwell Medical Centre, The Ropewalk, Southwell - 01636 813 561 (for students at Brackenhurst campus)

- [University Counselling Services](#): City Student Services Centre - 0115 848 6487, or counselling@ntu.ac.uk

- University Counselling Services: Clifton Student Services Centre, George Eliot Building, Clifton Campus - 0115 848 6623, or counselling@ntu.ac.uk

- University Counselling Services: Brackenhurst Student Services Centre, Bramley Building, Brackenhurst Campus - 0115 848 6487, or counselling@ntu.ac.uk

- [NTU Mental Health Support Team](#) - 0115 848 2085 or mental.health@ntu.ac.uk

You can also contact [Nottingham Nightline](#), the local confidential information and listening service run by university students. They provide a nightly listening and information service for both Nottingham Trent University and University of Nottingham. They are open between 7pm-8am daily (open 24 hours during some periods in term) and can be contacted via phone at **0115 951 4985**, by email at nightlineanon@nottingham.ac.uk, or by [instant messaging](#).

[The Mental Health Helpline](#) is open to all residents in Nottingham who are registered with a GP. They provide a listening ear and emotional support for individuals, or carers of people, experiencing mental distress. Call **0800 561 0072** or text 07506 628 693 for a call back. Helpline is open 5pm - 9am Monday to Friday, and 24 hours a day at weekends and during bank holidays

Other resources and services:

- [The Samaritans](#) provides confidential and non-judgemental emotional support for people who are experiencing feelings of despair or distress. Tel: 08457 90 90 90 (open 24 hours a day, 7 days a week) or email jo@samaritans.org

- [NHS Direct](#) - for advice and information about health, can also be contacted via telephone on 111

- [Mind](#) - UK mental health charity, information line: 0300 123 3393 or email info@mind.org.uk. Mind also has an A to Z of information and advice on their website.

- [Rethink](#) has a wealth of information about mental health issues, advice line open Mon-Fri 10am-2pm - 0300 5000 927

- [Students Against Depression](#) - information about depression especially for students

- [NHS Choices - mental health](#) - information about various mental health topics

- [hopeline UK](#) - provides non-judgemental support, advice and information to young people who are worried about their mental health or about others. Tel: 0800 068 41 41 - open 10am-5pm and 7pm-10pm Mon-Fri, and 2pm-5pm on weekends. Email pat@papyrus-uk.org or send text to 07786 209697.

- [SANE](#) provide emotional support, help and information for a range of mental health issues - via telephone on 0845 767 800 (open 6pm-11pm every day); via email and through an online support group.

- [Harmless](#) is a user led organisation that provides a range of services about self harm including support and information to people who self harm, their friends and families and professionals. Email info@harmless.org.uk

- [MoodGym](#) is a free popular interactive online program which incorporates cognitive-behaviour therapy for depression. It has been extensively researched and its effectiveness has been demonstrated in several trials

Prev

Done

Appendix 23. Items on the two Depression Stigma Scale (DSS) subscales and their level of endorsement (Study Four).

NB: Percentages are in brackets.

<i>Personal Stigma subscale</i>	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
1. People with depression could snap out of it if they wanted	266 (55.1)	127 (26.3)	57 (11.8)	24 (5)	9 (1.9)
2. Depression is a sign of personal weakness	293 (60.7)	125 (24.9)	24 (5)	37 (7.7)	4 (0.8)
3. Depression is not a real medical illness	305 (63.1)	132 (27.3)	25 (5.2)	19 (3.9)	2 (0.4)
4. People with depression are dangerous	171 (35.4)	145 (30)	113 (23.4)	46 (9.5)	8 (1.7)
5. It is best to avoid people with depression so you don't become depressed yourself	269 (55.7)	148 (30.6)	42 (8.7)	22 (4.6)	2 (0.4)
6. People with depression are unpredictable	84 (17.4)	98 (20.3)	129 (26.7)	152 (31.5)	20 (4.1)
7. If I had depression I would not tell anyone	68 (14.1)	147 (30.4)	113 (23.4)	117 (24.2)	38 (7.9)
8. I would not employ someone if I knew they had been depressed	224 (46.4)	168 (34.8)	61 (12.6)	29 (6)	1 (0.2)
9. I would not vote for a politician if I knew they had been depressed	245 (50.7)	142 (29.4)	58 (12)	31 (6.4)	7 (1.4)
<i>Perceived Stigma subscale</i>					
1. Most people believe that people with depression could snap out of it if they wanted	9 (1.9)	70 (14.5)	123 (25.5)	240 (49.7)	41 (8.5)
2. Most people believe that depression is a sign of personal weakness	9 (1.9)	110 (22.8)	111 (23)	218 (45.1)	35 (7.2)
3. Most people believe depression is not a real medical illness	11 (2.3)	128 (36.5)	113 (23.4)	195 (40.4)	36 (7.5)
4. Most people believe that people with depression are dangerous	31 (6.4)	145 (30)	155 (32.1)	129 (26.7)	23 (4.8)
5. Most people believe that it is best to avoid people with depression so you don't become depressed yourself	30 (6.2)	131 (27.1)	123 (25.5)	172 (35.6)	27 (5.6)
6. Most people believe that people with depression are unpredictable	7 (1.4)	80 (16.6)	160 (33.1)	213 (44.1)	23 (4.8)
7. If they had depression, most people would not tell anyone	6 (1.2)	41 (8.5)	109 (22.6)	254 (52.6)	73 (15.1)
8. Most people would not employ someone if they knew they had been depressed	11 (2.3)	86 (17.8)	159 (32.9)	182 (37.7)	45 (9.3)
9. Most people would not vote for a politicians if they knew they had been depressed	16 (3.3)	95 (19.7)	188 (38.9)	139 (28.8)	45 (9.3)

Appendix 24. Coded scores for each MHFA action (Study Four).

NB: Scores are sub-grouped by Participant Gender X Vignette Gender condition, participant gender and type of degree studied.

MHFA action	Score	Whole sample (N=483)	Participant Gender X Vignette Gender condition				Participant gender		Type of degree	
			Female saw female vignette (N=187)	Female saw male vignette (N=170)	Male saw male vignette (N=69)	Male saw female vignette (N=57)	Male (N=126)	Female (N=357)	'Relevant' (N=161)	Non-relevant' (N=320)
Approach the person	0	394 (81.6)	148 (79.1)	142 (83.5)	55 (79.7)	49 (86)	104 (82.5)	290 (81.2)	127 (78.9)	265 (82.8)
	1	81 (16.8)	35 (18.7)	25 (14.7)	13 (18.8)	8 (14)	21 (16.7)	60 (16.8)	29 (18)	52 (16.3)
	2	8 (1.7)	4 (2.1)	3 (1.8)	1 (1.4)	0 (0)	1 (0.8)	7 (2)	5 (3.1)	3 (0.9)
Assess and assist with any crisis	0	475 (98.3)	184 (98.4)	168 (98.8)	69 (100)	54 (94.7)	123 (97.6)	352 (98.6)	157 (97.5)	317 (99.1)
	1	6 (1.2)	2 (1.1)	2 (1.2)	0 (0)	2 (3.5)	2 (1.6)	4 (1.1)	3 (1.9)	2 (0.6)
	2	2 (0.4)	1 (0.5)	0 (0)	0 (0)	1 (1.8)	1 (0.8)	1 (0.3)	1 (0.6)	1 (0.3)
Listen non-judgementally	0	225 (46.6)	94 (29.9)	68 (40)	30 (43.5)	33 (57.9)	63 (50)	162 (45.4)	56 (34.8)	168 (52.5)
	1	222 (46)	82 (43.9)	89 (52.4)	31 (44.9)	20 (35.1)	51 (40.5)	171 (47.9)	81 (50.3)	140 (43.8)
	2	36 (7.5)	11 (5.9)	13 (7.6)	8 (11.6)	4 (7)	12 (9.5)	24 (6.7)	24 (14.9)	12 (3.8)

<i>Give support and information</i>	0	176 (36.4)	56 (29.9)	64 (37.6)	34 (49.3)	22 (38.6)	56 (44.4)	120 (33.6)	53 (32.9)	122 (38.1)
	1	258 (53.4)	110 (58.8)	87 (51.2)	30 (43.5)	31 (54.4)	61 (48.4)	197 (55.2)	84 (52.2)	173 (54.1)
	2	49 (10.1)	21 (11.2)	19 (11.2)	5 (7.2)	4 (7)	9 (7.1)	40 (11.2)	24 (14.9)	25 (7.8)
<i>Encourage professional help</i>	0	200 (41.4)	71 (38)	72 (42.4)	34 (49.3)	23 (40.4)	57 (45.2)	143 (40.1)	57 (35.4)	142 (44.4)
	1	104 (21.5)	41 (21.9)	37 (21.8)	15 (21.7)	11 (19.3)	26 (20.6)	78 (21.8)	33 (20.5)	71 (22.2)
	2	179 (37.1)	75 (40.1)	61 (35.9)	20 (29)	23 (40.4)	43 (34.1)	136 (38.1)	71 (44.1)	107 (33.4)
<i>Encourage other supports</i>	0	331 (68.5)	124 (66.3)	121 (71.2)	50 (72.5)	35 (63.2)	86 (68.3)	245 (68.6)	97 (60.2)	232 (72.5)
	1	127 (26.3)	47 (25.1)	44 (25.9)	16 (23.2)	20 (35.1)	36 (28.6)	91 (25.5)	52 (32.3)	75 (23.4)
	2	25 (5.2)	16 (8.6)	5 (2..9)	3 (4.3)	1 (1.8)	4 (3.2)	21 (5.9)	12 (7.5)	13 (4.1)

Coding of responses: 0 = Not mentioned or inadequate response; 1 = Superficial response; 2 = Good response with specific detail

Appendix 25. Information sheet for participants (Study Five).

Division of Psychiatry & Applied Psychology Institute of Mental Health

Triumph Road
University Of Nottingham
Jubilee Campus
Nottingham
NG7 2TU



Title of study: Exploring the usability of an online resource to improve depression literacy in undergraduate students

Research team:

Eleanor Bethan Davies, PhD student
Prof. Cris Glazebrook, Professor in Health Psychology
Prof. Richard Morriss, Professor of Psychiatry & Community Mental Health

We would like to invite you to take part in a research study conducted by Eleanor Bethan Davies (PhD student), Prof. Cris Glazebrook, and Prof. Richard Morriss, who are all from within Division of Psychiatry & Applied Psychology, Faculty of Medicine at the University Of Nottingham. **Before you decide whether you wish to take part in the study, it is important for you to understand the purpose of the research and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish to do so.** If there is anything that is not clear to you or needs clarification, please feel free to contact us. If you would like more information regarding this study and what it involves, please contact us through the contact details listed at the end of this information sheet. It is your choice to take part in this study.

We are conducting a user evaluation study to explore students' perceptions and usability of a website designed to improve students' knowledge and attitudes about depression, and self-management of depression. It is hoped that the answers students provide will contribute towards adjusting the website before it is explored in a full research trial with university students.

What does the study involve and what will I have to do?

All aspects of the study are conducted online and do not require any face-to-face meetings with the research team. Your overall participation in this study, which includes consenting, completing two online surveys and accessing the website, should take less than two weeks to do.

If you consent to participate in the study, you will first complete a short online survey asking you some questions about yourself (e.g. your age,

gender) and your use of the internet and related technology for health purposes. You will then receive an email which provides you for instructions about how to access the website, things to look out for on the website, and the URL to this website. Over a seven day period, you will access this website in your own time. During this seven day period, we will also send you two emails which remind you about your participation in the study. The number of times you wish to access the website over the seven days is up to you – but **by the end we ask that you have explored every page at least once**. You will need to navigate yourself around the website, exploring and reading the content and think about its presentation and relevancy to students.

At the end of this seven day period, you will be emailed an online questionnaire. This questionnaire will be a mix of tick-boxes and open-ended questions wherein you are asked to type in your feedback. This should take approximately 30-45 minutes, depending on how much feedback you wish to give. Once you have completed this, the study is over and you will be awarded with a £10 Amazon.co.uk voucher as a token of appreciation for participation. If you have not accessed all the website during this seven day period, you will not be able to complete this survey or receive the voucher.

Why have I been approached?

You have been invited to this study because you are an undergraduate student at the University of Nottingham. We are looking for undergraduate students (aged 18 yrs and older) to take part in this study as the website has been designed for younger university students. However we are also interested in postgraduate students providing evaluation too.

To take part, you will also need to have a good comprehension of written and spoken English. It is hoped that we will have 20 students take part in this study. Any information you provide is kept secure and confidential, and we will anonymise your information through assigning you with a participant code. You will not be identifiable to others from this code, and you will be anonymous in in any findings published from the study.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw before, during, or after the study at any time without penalty. If you no longer wish to take part, please email us to state so.

What are the disadvantages of taking part?

The disadvantage of taking part in this study is that you would be giving up some of your time to participate. As you will be asked to access the website over a week, you may have concerns about the time required to complete it. We have not provided any suggestions on the minimum amount of time we would like you to spend interacting with the website – so that you are in control of the time you spend on it. Although the website

consists of many webpages, the content on each one is fairly brief. We hope that the time spent on the website will not be too demanding for you and fits around your academic commitments. All we wish is that during the seven day period, you explore and read every page of the website at least once. This is so you will be able to evaluate it at the end of the study. We will provide you with brief written instructions regarding what you need to do on the website.

Another disadvantage is that as this website is designed to improve awareness and understanding of depression and help available for it, you may feel the website is irrelevant to your current situation. Likewise you may have personally experienced depression and possibly had experience of treatment or help for it. We are interested in knowing whether this website's content and tone is appropriate for helping students in Nottingham help their understanding of depression and whether it could improve their intentions to seek help or self-management of depression (should they experience it). If you have experienced depression, or had someone close to you experience it, you may find it useful to think retrospectively about the website's content and whether it could have helped you in the past.

What are the benefits of taking part?

This usability study may benefit you in providing you with additional knowledge and awareness of depression and help sources, and may change your attitudes and beliefs about depression and about seeking help if you experienced a problem. Likewise it may also provide you with ideas about how you could manage your own mental well-being. The findings from the study will help inform us whether the website has been developed well enough or whether adjustments need to be made to it. The findings can help us alter the website before it is evaluated in a full research trial with students attending the two Nottingham universities.

If you have any other questions or concerns about participating in the study, please feel free to contact Eleanor Davies - her details are listed at the end of this information sheet. Regardless of whether or not you choose to participate in the study please feel free to email us if you would like a summary of the study's findings.

Will my taking part in this study be kept confidential?

All information you provide us is treated with the strictest confidentiality. We will assign you a participant code throughout the study, and you will be asked to enter this code in the online survey at the beginning and end of the study. You will be asked to provide us with your email address so that we can contact you throughout the study (i.e. to send you two reminder emails) and to complete the online survey. We will not share your details with anyone outside of the research team and you will not be traceable from your answers.

All information collected about you in this study is kept secure in a password-protected document on a password-protected computer that only the research team has access to. In line with the University of

Nottingham's Code of Research Conduct & Research Ethics, all information and data collected in this study is kept by this team for seven years, after which it is destroyed.

What if I have a complaint about the study?

In case you have a complaint about anything to do with the study, you can contact Eleanor Davies, Professor Cris Glazebrook or Professor Richard Morriss, whose details are listed at the bottom of this sheet.

In the unlikely event that you suffer injury to yourself or damage to your property as a result in taking part in this research, the University does have an insurance policy to cover harm arising as a result of the defect in the design of the study.

Who is supervising the research, and has it been reviewed?

The research is being supervised by Professor Cris Glazebrook and Professor Richard Morriss in the Division of Psychiatry & Applied Psychology at the University Of Nottingham. Their contact details are provided at the bottom of this form. As this is a usability study, review and approval by the university's ethics committee is not needed – however we have used the same protocol as would be required in any study (e.g. you need to consent to take part, and can withdraw at any time). Likewise the website and all materials relating to this study have been reviewed by the two professors overseeing this study.

Thank you for considering taking part in this study.

If you would like further information about this study or would like to confirm your interest in taking part, please contact Eleanor Davies through the following:

Eleanor Davies

PhD student, Division of Psychiatry
& Applied Psychology

Institute of Mental Health

Triumph Road

University Of Nottingham, Jubilee
Campus

Nottingham

NG7 2TU

Email: mcxebd@nottingham.ac.uk

Tel: 0115 74 85293

Supervisors of this study:

Prof. Cris Glazebrook

Professor in Health Psychology

Division of Psychiatry

Institute of Mental Health

Triumph Road

University Of Nottingham

Jubilee Campus

Nottingham

NG7 2TU

Email:

cris.glazebrook@nottingham.ac.uk

[Tel: 0115 823 0420](tel:01158230420)

Prof. Richard Morriss

Professor in Psychiatry and Community Mental Health

Institute of Mental Health

Triumph Road

University Of Nottingham

Jubilee Campus

Nottingham

NG7 2TU

Email:

richard.morriss@nottingham.ac.uk

Tel: 0115 823 0427

Appendix 26. Usability questionnaire (Study Five).

1. In the previous seven day period, have you managed to access the website at all?
 - a. Yes
 - b. No
2. Fidelity measure. Below are all the titles/names of each of the 63 webpages in the website. Please tick whether you did or did not go on each webpage during the previous seven day period.
 - a. NB: All webpage titles are presented. Participants are asked to endorse for each page whether:
 - i. Yes - saw webpage and read all material presented on page
 - ii. Yes - saw webpage and read some material presented on page
 - iii. No - did not access this webpage at all
3. Approximately over the last seven days how much time did you spend on the website? Please estimate your answer (in hours and/or minutes) and type it in the box below
4. What web browser did you access the website in?
 - a. Internet Explorer
 - b. Chrome
 - c. Firefox
 - d. Safari
5. Through which mediums did you access the website?
 - a. Computer/laptop
 - b. Smartphone
 - c. iPad or other tablet devices
6. If you accessed the website on more than one type of device (e.g. your laptop and phone) - did you notice any difficulties in the presentation of the website between the different devices?
 - a. Yes (please describe)
 - b. No
 - c. Unsure

System Usability Scale

7. Please rate the website's usability through these ten questions. Each question is rated on a level of agreement, ranging from strongly disagree to strongly agree.
 - a. I think I would like to use this website frequently
 - b. I found the website unnecessarily complex to use
 - c. I thought the website was easy to use
 - d. I think that I would need the support from a technical person to be able to use the website
 - e. I found the various functions in the website (e.g. buttons, hyperlinks) were well integrated
 - f. I thought there was too much inconsistency in the website

- g. I imagine that most students would learn to use this website very quickly
- h. I found the website very cumbersome to use
- i. I felt very confident using the website
 - i. I needed to learn a lot of things before I could get going with this website

Your satisfaction with the website

- 8. What are your general thoughts about the website?
- 9. How useful do you think the website is?
 - a. Likert Scale (5 options) – *Very useful to Not useful at all*
- 10. Did you like using the website?
 - a. Likert Scale (5 options) – *really liked to Didn't like it at all*
- 11. What aspects of the website did you like, and why?
- 12. What aspects of the website did you dislike, and why?
- 13. How helpful do you think this website will be to students in helping them manage depression?
 - a. Likert Scale (5 options)– *Extremely helpful to Not Helpful at All*
- 14. Although this study was just looking at gaining your perspectives and feedback of the website, do you feel the website had any impact upon your own knowledge and attitudes relating to depression? (e.g. was there any information presented on the website that you were not aware of before the study)
- 15. Were there any aspects of the website which you personally felt were not useful, or probably would not be used by Nottingham University students?

Content and understandability of website

- 16. Please answer the following questions about the content of the website. NB: all answers are on a Likert Scale of Strongly Agree ---- Strongly Disagree
 - a. I was able to understand the content presented on the website
 - b. I believe the content of this website is reliable
 - c. The language used in the website is familiar and understandable to university students
 - d. The language used was appropriate and sensitive
 - e. Through going through the website, I am aware of its purpose
 - f. I believe the information presented on the website was accurate
 - g. I found the website boring or not engaging to the user
 - h. I feel this website's content is relevant to university students attending the two Nottingham universities
 - i. I think this website would engage university students in Nottingham
 - j. The pictures, quotes and videos used in the website support the understanding of the website's content
 - k. I liked the use of text, pictures and videos

- l. I thought it was good that the website also directed to other relevant websites and resources
- 17. Was there too much/too little text presented on the webpages?
 - a. Just right amount of text presented on all pages
 - b. Too much text (e.g. big blocks of text) on all pages
 - c. Too much text (e.g. big blocks of text) on some pages
 - d. Too little text on all pages
 - e. Too little text on some pages
- 18. Do you feel the number of webpages in the website was sufficient?
 - a. Yes - there were a suitable number of webpages
 - b. No - there were too many webpages (overall or in specific sections of website)
 - c. No - there were too few webpages (overall or in specific sections of website)
- 19. Is there anything on the website which you thought was missing or should be changed, or something which could be addressed better or rephrased?
- 20. Was there any content on the website which you thought was either not relevant to local students, or might have a negative impact upon Nottingham university students?
 - a. Yes (please describe)
 - b. No
 - c. Unsure

The website's appearance

- 21. Please answer the following questions about the website's appearance and presentation. NB: all answers are on a Likert Scale of Strongly Agree ---- Strongly Disagree
 - a. The website made a good first impression on me
 - b. I found the general presentation of the website to be clear
 - c. The text font was easy to read
 - d. The quotes used (in speech bubbles) were easy to read
 - e. The appearance of the website is to my taste
 - f. The website is appealing in appearance
 - g. I liked the use of multimedia, e.g. pictures and videos alongside text
 - h. The information was presented in a way that I could understand it
 - i. I liked the colours used in the website
- 22. Was it easy or difficult to learn how to navigate your way around the website?
 - a. Very easy
 - b. Somewhat easy
 - c. Neither easy or difficult
 - d. Somewhat difficult
 - e. Very difficult
- 23. How easy was it to remember how to use the website when you had not accessed it for a period of time?
 - a. Very easy - I could easily remember how to use the website
 - b. Somewhat easy to remember how to use it

- c. Neither easy or difficult
- d. Somewhat difficult to remember how to use it
- e. Very difficult - I could not remember how to use the website when I came back to it

Navigation around website

24. Please answer the following questions about the website's navigation. NB: all answers are on a Likert Scale of Strongly Agree - --- Strongly Disagree

- a. It was easy to navigate my way through the website
- b. I found it easy to move from one webpage/section to another
- c. I had difficulties in making my way through the website
- d. Navigation through the website was consistent (e.g. buttons and hyperlinks)
- e. The layout of the website was consistent across all sections/webpages

25. Did you have any difficulties navigating your way around the website, or did you get 'stuck' or make any mistakes in making your way around the website?

- a. I did not have any difficulties at all in navigating through the website
- b. I experienced some or a few difficulties in navigating (please describe below)
- c. I experienced lots of difficulties in navigating (please describe below)

26. How easy or difficult do you think it would be for students to find a specific piece of information on this website (e.g. types of help available for depression)?

- a. Very Easy
- b. Somewhat easy
- c. Neither easy or difficult
- d. Somewhat difficult
- e. Very difficult

Relevancy and credibility of website

27. Please answer the following questions about the website's credibility and relevancy to the local university student population. NB: all answers are on a Likert Scale of Strongly Agree ---- Strongly Disagree

- a. From going through the website, I know who has developed the website.
- b. I think this website was developed by experts who were knowledgeable in the content of the website.
- c. I believe this website's content has been based on evidence.
- d. I believe this website is trustworthy, and that students will trust it.
- e. The content of the website is relevant to university students in Nottingham.

28. From your perspective - were there any important things missing in the website, or did the website not address certain concerns that university students may have about depression, seeking out help, or other aspects of self-management?
29. What did you think about the "Information for Parents" section of the website? Do you think this would be useful to parents of university students, and is there anything missing from this section?
30. What did you think about the "Supporting a friend with depression" section of the website? Do you think this would be useful for university students, and is there anything missing from this section?
31. Please answer the following questions about whether you think the website could help students' management of depression. NB: all answers are on a Likert Scale of Strongly Agree ---- Strongly Disagree
 - a. I think the website could help change students' attitudes and beliefs towards depression.
 - b. I think the website could help students' abilities to identify and recognise depression.
 - c. I think the website could help students' knowledge of and attitudes towards seeking out professional help.
 - d. I think the website could help students' knowledge of and use of self-help strategies for managing depression.
 - e. I think the website could help students' abilities to help a friend experiencing depression.

Potential future use of website

32. Would you use this website in future?

- a. I would definitely use this website in future
- b. I would probably use this website in future
- c. It depends on my circumstances and whether I felt I needed to use it
- d. I would probably not use this website in future
- e. I would definitely not use this website in future

1. Additional comments

33. How likely would you be to recommend the website to friends and/or other students?

- a. Extremely likely to recommend
- b. Quite likely
- c. Moderately likely
- d. Slightly likely
- e. Not at all likely to recommend

34. Please add any other comments you have about the website which have not been covered in the previous questions, or any suggestions or improvements that we could make to the website (e.g. the website's name).

Appendix 27. Participant instructions (Study Five).

Dear [participant]

Thank you for volunteering and consenting to take part in our study. The study involves you engaging with a new website we have developed for university students attending either the University of Nottingham or Nottingham Trent University. The website is designed to improve students' understanding of what depression is, what help can be sought for it, and how they can independently manage depressive symptoms.

Firstly, we ask that you complete a short online survey. This online survey asks brief questions about yourself and your studies, your use of the internet and related technologies, and whether you have used the internet for purposes related to mental health. The link to the survey is here [URL here] – we ask that you complete this first before you start exploring the website. You will be asked to enter your participant number into this online survey: for this study your participant ID code is: _____. Please do not delete this email as you will need to type this code in again into the online survey you will receive one week after this email (i.e. after you have accessed the website).

Once you have completed the online survey, feel free to access the website we are asking you to evaluate: [URL here]

Over the next seven days, we ask that you go on this website several times and interact with all aspects of it – that includes going through the pages listed in the navigation menu on the right-hand side and exploring each page. I will send you an email twice during this seven day period to remind you to look at the website.

It is up to you how long you stay on the website when you visit it – you can either look at certain sections each time or look at the whole website at the same time. Nonetheless at the end of the seven days we would appreciate it if you have viewed and read every webpage at least once. This is so that at the end of the seven days, you are familiar enough with the website to give some feedback about it. Accessing the website does not require you to create a username and password.

We are interested in how you, as a user, interact, perceive and engage with the website, and whether it has any affect upon your knowledge, beliefs and attitudes towards depression, help available for depression and how students can manage it.

When navigating the website, please take into consideration:

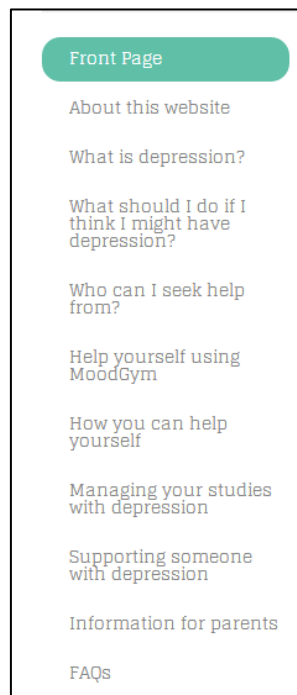
- Its presentation (e.g. text, colours, layout)
- Its ease of navigation
- The relevancy of the information provided to you and to students
- The readability of the text – does it make sense? Can you understand it?
- Whether anything is missing or needs to be changed

Please feel free to contact me at mcxebd@nottingham.ac.uk at any time during this study if you have any queries about using the website or what you need to do.

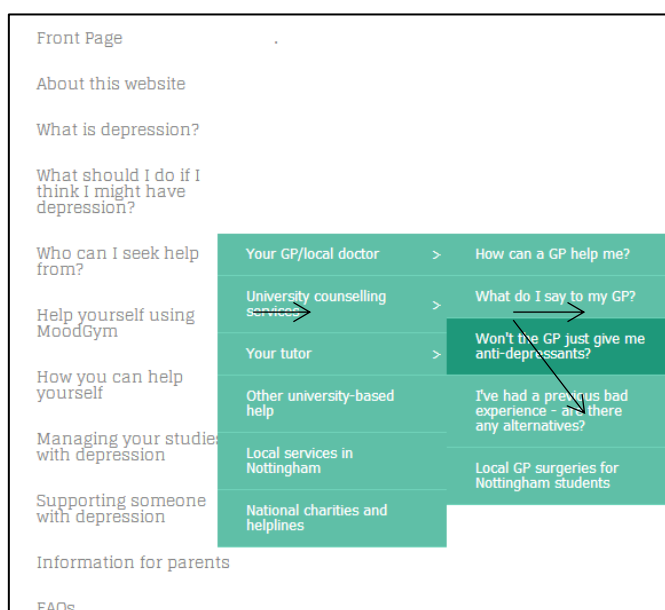
Many thanks for participating – we really appreciate it.

Brief guide to using the website

The front page of the website (URL here) contains several buttons which lead you to different sections of the website. Throughout any page you access on the website, a navigational tool bar will appear on the left-hand side of the page:



Hovering over the different section names brings up the webpages that are in each section. For example, placing the cursor on the "Who can I seek help from?" section brings up a list of help resources, and within each one there are a series of webpages:



Each webpage will have a mixture of text and pictures, e.g.:

Front Page	Deciding to seek help: pros and cons	
About this website	Students experiencing depression may find it difficult to decide whether or not they should seek help. They may prefer to deal with it on their own. There are many reasons why students do and do not want to seek out help, or may be uncertain about doing so:	
What is depression?		
What should I do if I think I might have depression?	<i>Reasons students may seek out help</i>	<i>Reasons students may not seek help</i>
Who can I seek help from?	<ul style="list-style-type: none"> I want to make sense of it and understand why I am feeling this way – and to change it I need to put what I'm feeling into perspective It is affecting my life and relationships a lot - I want to get my life back on track It is helpful to talk about my feelings - it helps me better understand them I don't want to feel like this any more I want relief from keeping my worries to myself It is affecting my ability to do my academic work and exams Professionals are there to help people – it's normal to seek out help I feel isolated and want to talk to someone about what I'm feeling 	<ul style="list-style-type: none"> The help available isn't useful or appropriate for me I'm worried I won't be listened to or taken seriously I don't know how a professional can help me I am worried about what would happen in an appointment – or what the treatment would be like I'm worried what the professional or my friends/family would think about me seeking help I'm not good at talking about my personal issues – or feel uncomfortable talking to someone I don't know I feel embarrassed talking about my personal issues Seeking help shows that I am weak and cannot cope by myself Feeling depressed is a normal aspect of university life I don't want to burden another person with my problems I don't want to be treated any differently due to having sought help I'm anxious about seeking help Seeking help means I have a problem
Help yourself using MoodGym		
How you can help yourself		
Managing your studies with depression		
Supporting someone with depression		
Information for parents		
FAQs		
Seeking out help does not mean you are 'weak' – if we are experiencing a problem, we often go and seek out relevant help to deal with it. You are in control of your own mental health – and speaking to a professional means you're taking control and getting help from someone relevant. Likewise you may think what you're feeling is typical of university students and so doesn't require help – however receiving help will aid you in alleviating the symptoms and their effects.		

Please take time to read the text and think about the language used. Does it make sense? Is it appropriate for undergraduate university students (aged 18-24 yrs)? Feel free to note down your thoughts on a piece of paper/word document. At the end of the two weeks, you can then feedback your thoughts into our feedback online survey.

We have not provided any explicit instruction about the amount of time we would like you to take exploring the website – that is up to you. You may prefer to explore one section at a time, or explore it all at once. For example you may wish to start by looking through the pages under the "What is depression?" and "What should I do if I think I might have depression?" sections. Nonetheless, we ask that you have looked at and read the content of all the website's pages at least once.

Please feel free to contact me at mcxebd@nottingham.ac.uk at any time during this study if you have any queries about using the website or what you need to do.

Appendix 28. Reminder email sent to participants (Study Five).

Dear [Participant]

You are being sent this email to remind you about your participation in the study exploring usability of a website (<http://nu-mymo.weebly.com>). You are reminded that you need to access the website during this seven day period. You need to actively work your way through the website so that you see every page of it. You have until [date] to do so – after this date we will send you an online survey to complete.

Thank you for participating in this study – we really appreciate it and hope that it is not too demanding for you.

If you have any concerns or questions, or would appreciate more time beyond this seven days to explore the website, please feel free to contact us via the contact details below. Likewise if you wish to withdrawal from the study, please email me to say so.

Many thanks

Eleanor Davies